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ICBRI 2021

Editors

Dr. Debasis Chanda
Dr. Amrita Sengupta
Dr. Debaditya Mohanti

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FOREWORD



The purpose of present edited book '*Business Research and Innovation*' is to provide current, comprehensive, state-of-the-art articles in review of management research. The book covers a wide range of theoretical perspectives, paradigms, data (qualitative, survey, experimental, secondary, etc.), and topics related to the study and explanation of advances in management research. The chapters in the book attempts to make important theoretical, substantive, empirical, methodological, measurement, and modeling contributions. It is hoped that a humble effort made in the form of this book will assist in the accomplishment of exploratory as well as result-oriented research studies.

PREFACE

This book is written for leading researchers and academic scientists, comprising of students and Faculty members of Academic Institutes, as well as corporate practitioners who have participated, contributed and value added immensely to the Conference.

The book showcases recent research related to the areas of Business Research and Innovation. The book captures the efforts of the researchers to exchange and share their experiences and research results, and is a modest initiative by the Editors to appreciate research talents and to motivate research spirit among students, research scholars and academicians.

The scope of the book covers the domains of Finance, Marketing, Operations & Information Systems Management, Business Innovation, Entrepreneurship, Organizational Behavior and Human Resource Management. Along with research and innovation, the book attempts to cover deliberations on recent challenges, and trends.

ACKNOWLEDGEMENT



This publication is an outcome of the International Conference on Business Research and Innovation organized by Management Development Institute Murshidabad, on February 26–27, 2021. We are thankful to all the authors from prestigious Institutes and Universities who shared their research results and contributed to the making of this book.

We would like to extend a heartfelt thanks to all our Keynote Speakers of the Conference, who devoted their time and energy for us. Dr. Pradip Bose, a scientist, an innovator from the industry, who took us to the world of AI through his innovations and let us have a peek into some important aspects for management researchers of today. Our Second Keynote speaker, Dr. Ajay Bandi from the academia went into the world of data analytics and beautifully related it to the practical managerial applications. Our third Keynote Speaker, Dr. Sarbari Gupta, a successful entrepreneur and a leader in her area, motivated us by sharing her path to becoming a successful corporate leader. Dr. V.G.Venkatesh our fourth Keynote Speaker talked about the current global Changes in Business Research. We are thankful for their Extremely insightful contributions.

We would like to thank Prof. Gautam Dutta, Prof. Rohit Joshi, Prof. N. Sivasankaran, Prof. Chandradeep Mitra & Prof. Rohit Dwivedi for providing authors with constructive feedback which were definitely the need of the hour.

We would take this opportunity to thank our honourable director Prof. Dr. Atmanand for always motivating us to do the right things. A special thanks to Mr. Sayantan Sinha, for providing all necessary support and being a dedicated and dependable part of our team. We would also like to thank Mr. Debasis Gupta for providing all necessary support wherever necessary. We would also like to thank Mr. Saheb, Ms. Dayawanti, Mr. Jogen, our finance team & our IT Team, Mr. Joydeep, Mr. Avirup, Mr. Tapas and all others part of the team for providing all necessary support as and when required. Definitely without team effort from all the team members this book would not have happened. Lastly To make an end is to make a beginning. Lets Live as if we were to die tomorrow and Learn as if we were to live forever.

All the very best and thanks to ALL.

Editors

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Super Learners for Fake Review Detection

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Abstract: The purpose of this study is to investigate whether the combined power of several classifiers will produce better accuracy or not in detecting fake reviews. We approached the problem by considering the ‘super learner’ architecture introduced by Laan et al. (2007). We tested the technique over two separate industrial datasets. The evaluation was performed over three key matrices viz. accuracy, area under the curve and, F1. We also explored whether a feature or a set of features is/are more effective in the task or not. Findings suggest that the use of “super learner” indeed improves performance. The findings are consistent in both datasets. We also discovered that a combination of features may not necessarily lead to better performance. We also proved our hypothesis that the output of ‘super learner’, in general, outperforms the performance of base learners. Our model has a great practical implication. With the increasing presence of fake reviews and the constantly declining credibility of review portals, our work provided a method to weed out fake reviews with greater accuracy. The scalability of our work makes it suitable for industrial deployment. Findings also suggest that our work is generalizable and could be used in different sectors. This study contributed to the existing body of literature in the fake review domain. Our work is among the first to our limited knowledge to have explored the use of ‘super learners’ in natural language processing settings, especially in the fake review domain.

Keywords: Fake review, ‘super learner’s, yelp, amazon.

JEL Classification: C38, C61, C67, M15

INTRODUCTION

With the advent of the internet, people can find any information easily. Information is necessary for any decision-making process. The internet has democratized the information creation process. Now, anyone can express his/her views on any topic. The role of social media has been revolutionary in making this happen. Similarly, reviews posted on any review aggregator website help consumers to share their experience with the product or service (Li *et al.*, 2011). The review can be positive where the consumers were highly satisfied with the offerings or they can be negative where they didn’t find the offering to be satisfactory or up to the mark (Arjun *et al.*, 2013). The review serves a dual purpose for sellers and buyers. For sellers, they provide

the necessary endorsement of the product for which they haven't paid. It has been observed that reviews have a substantial impact on the sales and market performance of the firm. Studies have reported that people find comments and reviews by fellow users to be more credible as compared to sponsored content (Casaló *et al.*, 2015; Coker & Nagpal, 2013). The other purpose that the reviews serve is that they help the consumers in making an informed decision about the offering. Researchers have reported that consumers find reviews to be extremely important in their purchase process (Chevalier & Mayzlin, 2006; Dhar & Chang, 2009; Duan *et al.*, 2008; Forman *et al.*, 2008; Godes & Mayzlin, 2004; Liu, 2006). 90% of the customers have been reported to read online reviews before making purchase-related decisions and 88% have the trust in online reviews as much as a personal recommendation (Rudolph, 2015). A Cone Research study reports that 80 percent of consumers reverse their purchase decisions after reading negative consumer reviews, while 87 percent affirm their purchase decisions after reading positive consumer reviews (*Cone Releases the 2011 Online Influence Trend Tracker*, 2011).

Firms and people have realized the true potential of reviews. Reviews can make or break a brand. Firms have been caught in the mall practice of manipulating reviews (Mayzlin *et al.*, 2014; Simonson, 2016). The anonymity of the writer and the inability to verify the purchase has made it easier for the fake reviewers to post fraudulent content on review aggregator websites (Zhang *et al.*, 2016). Reviews can be used to promote a not so promising offering of the firm or they can be used to demolish the promising offering of the competitors. The presence of fake reviews has been ever-increasing on hospitality and e-commerce platforms. It has caused genuine consumers to distrust the information available on the internet. More people have over the years found that the content on the internet is filled with spurious and exaggerated information. As per the study conducted by Borden & Tew (2007) as much as 98% of people say they distrust the Internet, fearing the information is outdated, self-promotional, or inaccurate.

Such presence of fake review undermines the credibility of the review aggregator sites. They strive hard for early detection of fake reviews to arrest its impact. Manually detecting fake reviews is an impossible task. Every day millions and millions of reviews are posted on different portals across varied platforms. This called for research in automatic fake review detection. The first effort in this direction was made by Jindal and Liu back in 2007 (Jindal & Liu, 2007). They used logistic regression over the set of 34 features derived from the data to classify a review as fake or truthful. Over the years many more features and techniques have been adopted by the research scholars to make fake review detection more and more accurate and fast. Supervised learning has been the go-to method to approach the problem. However, some researcher has taken the path less traveled and attempted the problem using semisupervised and unsupervised methods. With the advancement of deep learning techniques, most of

the recent work of fake review detection has been around it (Patel & Patel, 2018; Vidanagama *et al.*, 2020).

Our work contributes to the existing body of literature, we have attempted the problem using ‘super learner’s. Super learners are classifiers that combine the power of n number of base classifiers. It has been witnessed that often ‘super learner’ outperforms the base classifiers and provides better results on multiple evaluation matrices. Our motivation for using ‘super learner’ is that most of the prior work has shown the comparative performance of classifiers but has failed to combine their power (Barbado *et al.*, 2019; Fontanarava *et al.*, 2017; Mukherjee *et al.*, 2013). Furthermore, the researchers have evaluated the performance of the classifier on either accuracy, F1, or AUC metric. It is our duty as a researcher to develop an algorithm that can perform well on multiple evaluation criteria.

The rest of the paper is divided into 4 sections. Section 2 provides the necessary research context and discusses the state of the affair. Section 3 details the methodology used. Section 4 discusses our findings and Section 6 concludes our work and provides a future avenue for the work.

LITERATURE REVIEW

FAKE REVIEWS

Hancock (2012) has defined ‘digital deception’ as the “intentional control of information in a technologically mediated message to create a false belief in the receiver of the message”. He further went on to explain the two attributes of a review to be considered as a fake review. First, there should be intention or deliberation and the review must have been designed to mislead or create a false belief in some target audience. Wu *et al.* (2020) have defined fake reviews as “...are inconsistent with the real evaluation of products or services; thus, fake reviews are false, bogus, and deceptive reviews. ...The deciding feature of fake reviews is whether they mislead consumers”. The common theme in both the definition is the intention to mislead or deceive. Zhang *et al.* (2016) have extended these definitions by identifying the characteristic of the fake review poster as someone “... with little or no actual experience with the product or service being reviewed”. Fake reviews often contain positive or negative connotations. A positively worded fake review can be used to promote a product. Whereas, a negatively toned fake review can be written to unjustifiable ridicule a competing product to damage their reputation.

BUSINESSES AND FAKE REVIEWS

The presence of fake reviews is increasing at an exponential rate and has become a problem for market regulators. Researchers have noticed that service providers avail

themselves the service of fake reviewers when their reputation is weak owing to few or negative reviews.

Moreover, when the establishment is under threat from competitors then they are more prone to unfavorable reviews (Luca & Zervas, 2016). In the study conducted by (Mayzlin et al., 2014), they have reported that small-time establishments are the biggest gainer from review manipulation. However, the problem with fake reviews is so much pervasive in nature that not only small businesses but big multinational conglomerates are also involved in it. For example, Samsung has been accused of hiring students to post negative fake reviews against products manufactured by HTC (Ahmad & Sun, 2018). Another instance of involvement of big corporates in review manipulation is that the general manager of communications in the AsiaPacific region of French Hotel chain Accor Group was caught posting positive fake reviews for the hotel across the globe (*Choice: Be Aware of Fake Hotel Reviews Online* | *Queensland Times*, 2013). In the US as many as 19 companies were heavily fined when they were convicted for their involvement in posting fake reviews on websites like Yelp.com, Google local, and city Search. Companies and organizations are constantly living under the threat of fake reviewers; hence it is imperative to design a mechanism that can discourage fake reviewers and detect existing fake reviews in the system (Ahmad & Sun, 2018).

FAKE REVIEW DETECTION

Fake reviews are needed to be detected as soon as possible. People have attempted to detect them manually. Ott *et al.* (2012) in their work shared two reviews to appraise the readers. The review is about a couples stay at a Chicago based Hilton Hotel:

- “My husband and I stayed in the Hilton Chicago and had a very nice stay! The rooms were large and comfortable. The view of Lake Michigan from our room was gorgeous. Room service was really good and quick, eating in the room looking at that view, awesome! The pool was really nice but we didn’t get a chance to use it. Great location for all of the downtown Chicago attractions such as theaters and museums. Very friendly staff and knowledgeable, you can’t go wrong staying here.”
- “We loved the hotel. When I see other posts about it being shabby I can’t for the life of me figure out what they are talking about. Rooms were large with TWO bathrooms, lobby was fabulous, pool was large with two hot tubs and huge gym, staff was courteous. For us, the location was great {across the street from Grant Park with a great view of Buckingham Fountain and close to all the museums and theatres. I’m sure others would rather be north of the river closer to the Magnificent Mile but we enjoyed the quieter and more scenic location. Got it for \$105 on Hotwire. What a bargain for such a nice hotel.”

Through the naked eye, it is extremely difficult to identify which of the above-mentioned review is fake or genuine. Please see the footnote¹ to find the answer. Only an expert in linguistic may be able to differentiate between them. Manually identifying fake reviews is a daunting task especially when millions of reviews are being posted every day. This challenge called for an approach toward automatic fake review detection.

Jindal and Liu (2007) made the first reported attempt towards identifying. They extracted 34 features from the review text. These features can be grouped as review centric, user centric, and product centric. They trained logistic regression on these features to accomplish the task. Besides the feature mentioned earlier linguistic, temporal, and spatial feature sets were also explored by the various researchers in their quest for a better performing algorithm. Since then, different algorithms and machine learning techniques have been deployed by various researchers (Crawford *et al.*, 2015). Support Vector Machines and Naïve Bayes algorithm have proved to be a staple among Natural Language Processing academicians in the classification tasks. Recent advancement in machine learning techniques has witnessed newer and better algorithms such as Boosting based techniques, random forest techniques that are easy to scale and provide better performance. When the output is labelled then supervised learning approaches are most useful and appropriate. However, the lack of labeled data pushed the researcher to explore the effectiveness of semi-supervised and unsupervised learning techniques (Vidanagama *et al.*, 2020).

The advancement in computational power has opened a new front in the field of deep learning. Deep learning techniques relying on ‘attention’ and transformer architecture can understand long term dependencies and similarity among the text. These advantages make them ideal for fake review detection task. Off late many researchers have attempted the fake review problem using deep learning techniques and found success (Kumar *et al.*, 2018; Patel & Patel, 2018). The deep learning techniques have the inherent drawback that they require a lot of infrastructural investment and are complex to implement, difficult to train. Scalability is also an issue as it is heavily dependent on the supporting hardware that is expensive to procure.

SUPER LEARNERS

Laan, Polley, and Hubbard (2007) in their paper titled ‘Super Learner’ proposed the ‘super learner’ architecture. The motivation behind the design of ‘super learner’ was that it is difficult to determine which algorithm will perform better, due to this data scientist apply the different algorithm on the same dataset. Some of these algorithms will be evaluated multiple times with varying configurations. These configurations will give us tens and hundreds of models for our problem. So, why not use all of these models instead of a single best model. The ‘super learner’ algorithm involves

[1] First review is fake

the k-fold splitting of the data. Then evaluating different algorithms and their distinct configuration. All the out-of fold predictions are then used to train the Learner that learns how to best combine the predictions. It was hypothesized that the result of the model should be no worse than the best performing model during the cross-validation stage, and has the potential of outperforming any single model. Fig 1. shows the ‘super learner’ architecture developed by Laan *et al.* (2007).

A surprisingly large amount of literature regarding ‘super learner’s since then have come from bio-medical fields. Researchers have used the technique in regression as well as classification settings. Cartus, Bodnar, and Naimi (2020) have used the ‘super learner’ in an epidemiology setting, Cooper, Minneci, and Deans (2018) have used ‘super learner’ in predicting neonatal mortality, Engels *et al.* (2020) have used the technique in predicting osteoporotic hip fracture. Lloyd *et al.* (2020) have deployed ‘super learner’ architecture for classification purposes in Geographical information System setting. On the other hand, Sonobe *et al.* (2018) have employed ‘super learner’s in crop classification problems. The work of Cornelissen, Schoonwinkel, and Barnett (2019) was among the few where ‘super learner’s were used in traditional big data settings for social medial account classification.

Farrelly (2017) have demonstrated that ‘super learner’ architectures provide better performance than deep learning architecture on several industrial datasets used for the classification task. The author claimed that the result of ‘super learner’s is more interpretive in nature and they converge faster as compared to deep learning networks.

RESEARCH METHODOLOGY

MODEL

The architecture of super leaner is shown in fig 1. The algorithm can be explained in the following steps:

1. Prepare a list of L base algorithms. You can initialize the algorithms with default parameter or could customize them to a specific value
2. Select a meta-learning algorithm. This algorithm can be from the base Learner or can be a different algorithm altogether.
3. Train the dataset on each of the L base algorithms
4. Perform k -fold cross-validation on each of the base Learners and store the predicted values from each L algorithms
5. The N cross-validated value from each L Learner will form an $N \times L$ matrix. This matrix along with the original output variable is called ‘Level-one’ data
6. In order to make the prediction, first, generate predictions from the base Learners, then feed these predictions into the meta Learner to generate final predictions

Mathematically it can be expressed as:

$$n\{[p_1] \dots [p_L][y]\} \rightarrow n\{[\tilde{z}][y]\} \quad eq - (1)$$

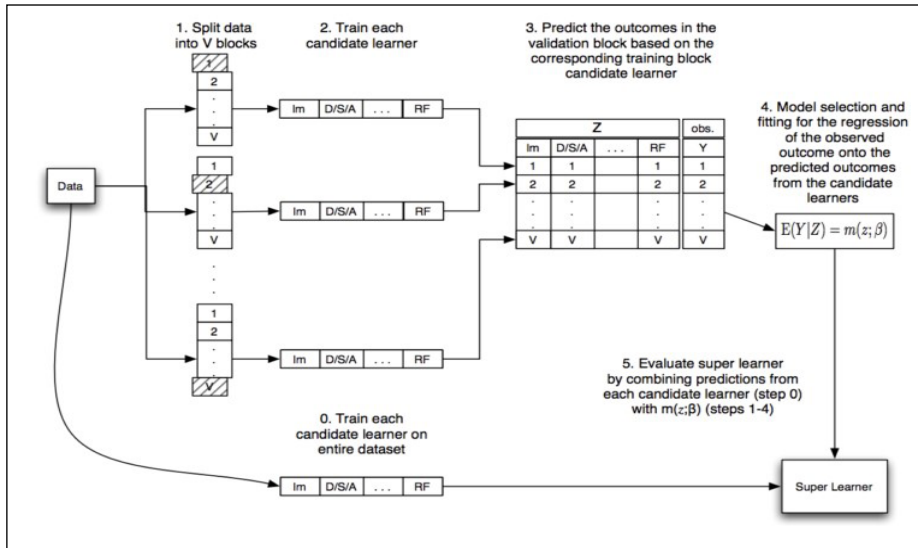


Fig. 1: The Architecture of Super Leaner (Laan et al., 2007)

We have used amazon and yelp fake review datasets. These datasets are chosen because the features we have used are compatible with these datasets. The selection of these two datasets also ensures the generalizability of our model. For the base classifiers, we have chosen well reported classifiers in the fake review domain. Altogether we have selected 5 classifiers viz, Support Vector Machine, Logistic Regression, Random Forest, XG Boost, and k-NN classifier.

As for the meta classifier, we experimented with different classifiers eventually zeroing on XG Boost as it was providing better performance. Since we have used 5 base classifiers, we have opted for 5-fold cross-validation. We have evaluated our model on key matrices such as accuracy, F1, and AUC.

DATASETS

The amazon product review dataset is extremely rich. The dataset includes comments from 1995 till 2015. It contains 26.7 million reviews across 3.1 million products posted by 15.4 million reviews. Due to infrastructural constraints, we have used a subset of the dataset. The subset contains 1,29,385 reviews out of which almost 30,000 reviews are fake. On the other hand, the YelpZip dataset contains reviews from the Yelp.com website dating between the period of 2010 to 2014 collected by Rayana and Akoglu (2015). The dataset contains approximately 0.6 million reviews across 5002 products

posted by 0.25 million users. This dataset contains 13.33% fake reviews. The Amazon product review dataset has meta-features such as label (1-truthful, 2-fake), verified purchase, rating, product category, product_id, review_id, review title, and review text. Whereas YelpZip dataset metadata contains features such as user_id, prod_id, rating, label, and date.

TEXT PREPROCESSING

As can be seen from the description of both the datasets provided in section 3.2, they both are imbalanced datasets. Imbalanced datasets are those data that doesn't contain equal data points for each of the classes. In both datasets, the number of truthful reviews far exceeds the number of fake reviews. The presence of imbalance affects the model performance. We used the 'imbalanced-learn' python package by Lemaître, Nogueira, and Aridas (2017) to under-sample both the datasets. In under-sampling, the instance of the majority class is reduced to be equal to that of the minority class. After undersampling Amazon review dataset had approximately 60,000 reviews and the YelpZip dataset was left with close to 1,57,000 reviews. The class or label in both the dataset was recoded into binary. Standard text preprocessing was performed after recoding which included removal of stopwords, URL, emojis and emoticon, lemmatization, lowercasing, spell checking, etc.

FEATURE ENGINEERING

After the preprocessing, a series of features were derived from the review text. The features and their description are shown in Table 1.

Table 1: Description of Features used in the Algorithm

S.No.	Features	Description
1	Review Length	Total number of words in a review
2	Average User Length	The average number of words per review by a user
3	Subjectivity	The ratio of subjective to objective words
4	Extremity	Whether the review contains an extreme rating (1 or 5)
5	Lexical Diversity	The ratio of unique words to the total number of words
6	Similarity	Cosine similarity among reviews posted by a user
7	Sentiment Potitive	Degree of Positive orientation of a review
8	Sentiment Negative	Degree of the negative orientation of a review
9	Sentiment Overall	The overall orientation of a review
10	Review Count	Number of reviews posted by a user
11	Avg Posting Rate	The average number of reviews posted by a user in a day
12	Max Posting Rate	Maximum number of reviews posted by a user in a day
13	User Variance Review Length	The variance of reviews length by a user
14	Average Product Length	The average number of words per review in a product type

Table 1 (Contd.)...

...Table 1 (Contd.)

15	Prod Variance Review Length	Variance in review length of a product
16	Char Count	Number of characters in a review
17	Punctuation Count	Number of punctuation present in a review
18	Entropy	Rating Entropy
19	Exclaim	Presence of Exclamation mark in a review

FINDING & DISCUSSION

Table 2, and 3 shows the performance of the model on YelpZip and Amazon dataset respectively. As can be observed from both the tables, in line with our assumption that a combination of the classifier may produce better results. In most of the scenarios, we were able to outperform the base classifier in both the training and testing phase. We have used the 70:30 training and testing strategy. It is to be noted we have used the model with default parameters, a slight change of parameter through GridSearchCV may give us improved performance. But one should be on the lookout that parameter tuning may lead to overfitting of the algorithm. Overfitting may make us believe that the performance of our algorithm is excellent however it is often seen that the performance of the algorithm declines substantially when new data is fed into it.

For YelpZip dataset highest accuracy 86.30% was attained when all the features were used, whereas the AUC of 82.50% was achieved when review and product centric features were combines. The best F1 measure was reported to be 84.50% when the user and product features were used. Overall review centric features could be seen to be most effective as that's is the case when all three matrices are generally giving better performance.

Table 2: Performance of the Model on the YelpZip Dataset

Features	Matrices	Training						Testing					
		LR	RF	XGB-Base	k-NN	SVM	XGB-Meta	LR	RF	XGB-Base	k-NN	SVM	XGB-Meta
Review Centric	Acc	83.80	87.20	89.70	83.70	89.50	88.30	78.00	73.00	77.90	76.80	68.20	84.70
	AUC	88.10	89.60	89.10	82.50	83.40	83.00	71.40	69.60	70.90	73.10	72.10	79.20
	F1	85.90	87.70	81.80	83.30	87.60	88.90	78.00	73.50	76.00	65.80	69.10	81.20
User Centric	Acc	88.30	85.10	83.70	81.30	82.60	88.60	80.50	76.10	75.70	72.80	74.60	83.40
	AUC	84.40	84.60	85.60	82.90	84.10	87.70	69.20	71.90	70.30	67.50	75.60	76.10
	F1	83.80	82.60	83.20	81.00	87.30	82.00	76.30	72.20	73.10	67.00	70.80	83.70
Product Centric	Acc	82.50	81.90	84.50	88.90	81.70	86.50	75.70	66.20	71.60	73.30	78.90	85.80
	AUC	89.80	85.30	89.80	81.00	84.70	83.20	76.60	66.20	73.90	72.70	74.90	80.70
	F1	84.80	88.00	84.30	85.50	89.80	85.60	75.70	77.60	73.90	80.50	78.60	82.60

Table 2 (Contd.)...

...Table 2 (Contd.)

Review + Product	Acc	83.90	81.60	89.10	89.30	87.90	88.30	79.50	70.80	67.50	72.30	79.20	79.10
	AUC	83.50	88.10	89.10	84.30	85.90	87.10	71.90	76.00	79.50	68.80	69.80	82.50
	F1	89.50	84.60	83.90	83.20	88.40	85.10	73.10	68.60	78.30	78.40	75.20	75.20
Review + User	Acc	88.00	89.60	83.60	81.50	87.30	84.40	72.80	74.10	80.20	66.70	80.90	83.60
	AUC	87.40	82.40	86.80	86.60	84.80	85.40	71.20	68.80	74.50	71.00	77.60	81.80
	F1	83.20	85.30	85.30	84.20	89.40	83.70	72.30	75.60	79.00	73.60	76.60	84.70
User + Product	Acc	84.40	89.00	84.50	82.80	85.50	81.10	79.40	72.30	74.10	74.50	78.90	76.20
	AUC	84.20	84.00	89.40	88.20	88.50	85.30	66.60	68.70	79.40	80.30	72.20	81.80
	F1	88.00	84.00	87.20	83.50	89.50	87.70	77.50	72.00	72.90	78.30	78.50	84.50
All	Acc	85.40	81.60	84.40	81.00	86.30	82.50	74.50	76.80	77.60	77.20	75.50	86.30
	AUC	83.20	85.50	84.30	81.40	89.40	82.30	76.00	69.60	69.90	73.40	77.00	77.20
	F1	81.90	84.40	87.20	87.80	89.80	85.10	79.10	75.60	71.40	76.40	76.50	80.70

Table 3 enlist the performance of the proposed model on the Amazon dataset. Similar to the performance of the model in the YelpZip dataset, here also ‘super learner’ is giving the best results in almost all the cases across different matrices. The highest accuracy of 82.20% was reported when the model was trained on user centric features only. Contrary to our findings in the YelpZip dataset, here product centric features were providing the best overall performance.

Perhaps the difference can be associated with sectors. While the YelpZip dataset was trained in the hospitality sector, the Amazon review dataset was trained on e-commerce transactions based reviews. The Highest AUC of 82.70% was reported when the review centric features were used, whereas, best F1 of 83.30% was found in the case of product centric features.

Table 3: Performance of the Model on Amazon Dataset

Features	Matrices	Training						Testing					
		LR	RF	XGB-Base	k-NN	SVM	XGB-Meta	LR	RF	XGB-Base	k-NN	SVM	XGB-Meta
Review Centric	Acc	80.30	89.80	81.50	81.50	77.10	81.80	76.40	73.80	66.70	71.00	74.20	79.10
	AUC	76.40	90.90	83.50	84.40	87.90	79.30	77.20	66.30	78.80	69.80	71.90	82.70
	F1	89.10	92.10	77.20	81.90	84.60	81.90	68.20	74.00	73.40	71.90	70.70	81.50
User Centric	Acc	81.70	75.10	86.50	81.00	85.80	87.60	72.90	69.20	69.30	73.10	79.30	82.20
	AUC	81.00	78.60	81.80	80.70	77.30	84.20	68.10	77.60	70.80	71.10	68.90	80.60
	F1	81.10	90.80	77.90	92.50	82.60	81.10	74.70	72.50	70.20	73.40	79.50	76.80
Product Centric	Acc	77.00	73.60	85.00	74.50	80.20	84.70	75.20	68.30	71.90	68.50	79.70	80.00
	AUC	85.10	76.70	84.20	79.10	78.40	82.20	75.80	78.20	79.20	65.20	71.50	80.20
	F1	85.00	78.10	88.30	82.60	80.90	79.90	73.20	81.90	67.80	73.30	74.60	83.30

Table 3 (Contd.)...

...Table 3 (Contd.)

Review + Product	Acc	85.70	83.70	82.50	84.40	77.60	80.50	76.00	65.10	73.60	73.50	75.80	78.30
	AUC	84.50	77.60	84.40	86.70	85.30	73.80	77.60	77.50	70.70	75.00	75.40	80.70
	F1	79.90	87.80	85.30	75.90	84.20	84.60	80.50	77.80	78.70	79.10	72.20	77.70
Review + User	Acc	82.20	85.30	86.40	82.20	74.90	78.40	77.10	67.10	70.90	74.40	74.50	77.40
	AUC	83.40	88.50	88.50	79.90	79.00	89.00	74.60	75.40	65.60	77.60	66.60	75.60
	F1	78.80	82.10	86.70	91.50	83.60	83.60	70.50	81.40	68.10	77.10	76.60	78.60
User + Product	Acc	74.10	87.50	81.60	80.10	83.50	75.10	81.50	72.10	76.30	76.30	68.40	77.20
	AUC	89.90	90.00	86.40	86.90	86.50	86.80	66.80	74.10	72.20	67.40	71.40	78.50
	F1	79.30	79.30	78.50	83.80	87.90	79.70	71.00	78.10	66.70	78.30	67.60	77.40
All	Acc	74.40	84.70	90.90	82.10	90.40	93.60	76.00	70.30	70.10	82.00	78.70	77.60
	AUC	79.00	84.10	75.00	91.90	81.50	86.80	70.80	77.20	69.20	70.30	74.60	78.90
	F1	86.10	83.50	78.40	74.20	83.10	86.10	75.70	76.50	75.20	73.60	77.60	79.50

A couple of points to be considered here is that a combination of feature sets doesn't need to give the best result. As visible from both the experiments although meta classifiers are giving better performance over base classifiers it may not be the best performance, as there may exist a feature or a set of features producing the best results. Also, to be noted that a single or combination of features may not give the best performance on all the evaluation matrices.

Still, we were able to prove that combining the power of varying base classifiers may provide us overall better performance across the different datasets.

CONCLUSION

Fake reviews are a menace to the e-commerce and hospitality sector. Firms and aggregator websites are constantly losing credibility. As time is progressing the presence of fake reviews is also increasing. Fake reviewers are coming up with new ways to masquerade their opinion among truthful ones to deceive the readers. To this automatic fake review, detection may provide some respite. Our work contributes to the existing body of literature on fake review detection. We used the 'super learner' technique proposed by Laan *et al.* (2007). We hypothesized that the combination of classifiers will provide us the better results and will often beat the base classifiers. To test the hypothesis, we chose two industrial datasets from different domains. In line with our assumption, the result showed that in general and across the domain, combining distinct classifiers may provide us with better results. Another takeaway from the study is that it may not be possible for the same single or combination of feature sets to yield better performance on several different evaluation matrices always. It is for the user of such an algorithm to decide for himself which evaluation metric is necessary. Focusing on a single evaluation metric may further improve the performance of the model through parameter tuning. The study has a couple of limitations, first, under-sampling the dataset may result in losing useful information. Secondly, the model was

tested on a simulated environment, in an actual scenario, its performance may improve or decline, previous research has shown on deployment the performance of the model generally declines by 4-5%. Finally, the model may converge faster than a deep neural network but still, it requires a substantial amount of time and memory. However, it is not much of a limitation as most of the corporates have access to computational infrastructure.

FUTURE WORK

In the future, we would like to explore more meaningful features. As these models are only as good as the data they get. A good set of features is highly like to improve model performance. We would also like to test our model on other important evaluation matrices such as average precision, precision @ n , etc., and would like to find a balanced result on all those matrices. Lastly, we would like to optimize the model so that it can converge even faster by using the lesser resource.

REFERENCES

- [1] Ahmad, W., & Sun, J. (2018). Modeling consumer distrust of online hotel reviews. *International Journal of Hospitality Management*, 71, 77–90. <https://doi.org/10.1016/j.ijhm.2017.12.005>.
- [2] Arjun, M., Vivek, V., Bing, L., & Natalie, G. (2013). Fake Review Detection: Classification and Analysis of Real and Pseudo Reviews. *Technical Report*, 80(2), 159–169.
- [3] Barbado, R., Araque, O., & Iglesias, C.A. (2019). A framework for fake review detection in online consumer electronics retailers. *Information Processing and Management*, 56(4), 1234–1244. <https://doi.org/10.1016/j.ipm.2019.03.002>.
- [4] Borden, S., & Tew, C. (2007). The Role of Journalist and the Performance of Journalism: Ethical Lessons From “Fake” News (Seriously). *Journal of Mass Media Ethics*, 22, 300–314. <https://doi.org/10.1080/08900520701583586>.
- [5] Cartus, A.R., Bodnar, L.M., & Naimi, A.I. (2020). The Impact of Undersampling on the Predictive Performance of Logistic Regression and Machine Learning Algorithms. *Epidemiology*, 31(5), e42–e44. <https://doi.org/10.1097/EDE.0000000000001198>.
- [6] Casaló, L.V., Flavián, C., Guinalú, M., & Ekinci, Y. (2015). Do online hotel rating schemes influence booking behaviors? *International Journal of Hospitality Management*, 49, 28– 36. <https://doi.org/10.1016/j.ijhm.2015.05.005>.
- [7] Chevalier, J.A., & Mayzlin, D. (2006). The Effect of Word of Mouth on Sales: Online Book Reviews. *Journal of Marketing Research*, 43(3), 345–354. <https://doi.org/10.1509/jmkr.43.3.345>
- [8] Choice: Be aware of fake hotel reviews online | *Queensland Times*. (2013). <https://www.qt.com.au/news/choice-be-aware-fake-hotel-reviews-online/2080900/>.
- [9] Coker, B., & Nagpal, A. (2013). Building-Up versus Paring-Down: Consumer Responses to Recommendations When Customizing. *Journal of Retailing*, 89(2), 190–206. <https://doi.org/10.1016/j.jretai.2012.11.002>.
- [10] Cone Releases the 2011 Online Influence Trend Tracker. (2011). <https://www.conecomm.com/news-blog/2011-online-influence-trend-tracker-release>.

- [11] Cooper, J.N., Minneci, P.C., & Deans, K.J. (2018). Postoperative neonatal mortality prediction using superlearning. *Journal of Surgical Research*, 221, 311–319. <https://doi.org/10.1016/j.jss.2017.09.002>.
- [12] Cornelissen, L.A., Schoonwinkel, P., & Barnett, R.J. (2019). A Socio-Informatic Approach to Automated Account Classification on Social Media. *Proceedings of the 10th International Conference on Social Media and Society*, 24–32. <https://doi.org/10.1145/3328529.3328541>.
- [13] Crawford, M., Khoshgoftaar, T.M., Prusa, J.D., Richter, A.N., & Al Najada, H. (2015). Survey of review spam detection using machine learning techniques. *Journal of Big Data*, 2(1). <https://doi.org/10.1186/s40537-015-0029-9>.
- [14] Dhar, V., & Chang, E.A. (2009). Does Chatter Matter? The Impact of User-Generated Content on Music Sales. *Journal of Interactive Marketing*, 23(4), 300–307. <https://doi.org/10.1016/j.intmar.2009.07.004>.
- [15] Duan, W., Gu, B., & Whinston, A.B. (2008). Do online reviews matter? — An empirical investigation of panel data. *Decision Support Systems*, 45(4), 1007–1016. <https://doi.org/10.1016/j.dss.2008.04.001>.
- [16] Engels, A., Reber, K.C., Lindlbauer, I., Rapp, K., Büchele, G., Klenk, J., Meid, A., Becker, C., & König, H.H. (2020). Osteoporotic hip fracture prediction from risk factors available in administrative claims data – A machine learning approach. *PLOS ONE*, 15(5), e0232969. <https://doi.org/10.1371/journal.pone.0232969>.
- [17] Farrelly, C.M. (2017). *Deep vs. Diverse Architectures for Classification Problems*. <http://arxiv.org/abs/1708.06347>.
- [18] Fontanarava, J., Pasi, G., & Viviani, M. (2017). Feature analysis for fake review detection through supervised classification. *Proceedings - 2017 International Conference on Data Science and Advanced Analytics, DSAA 2017, 2018-Janua*, 658–666. <https://doi.org/10.1109/DSAA.2017.51>.
- [19] Forman, C., Ghose, A., & Wiesenfeld, B. (2008). Examining the Relationship Between Reviews and Sales: The Role of Reviewer Identity Disclosure in Electronic Markets. *Information Systems Research*, 19(3), 291–313. <https://doi.org/10.1287/isre.1080.0193>.
- [20] Godes, D., & Mayzlin, D. (2004). Using Online Conversations to Study Word-of-Mouth Communication. *Marketing Science*, 23(4), 545–560. <https://doi.org/10.1287/mksc.1040.0071>.
- [21] Hancock, J.T. (2012). *Digital deception* (A.N. Joinson, K.Y.A. McKenna, T. Postmes, & U.D. Reips (Eds.); Vol. 1). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199561803.013.0019>.
- [22] Jindal, N., & Liu, B. (2007). Review spam detection. *16th International World Wide Web Conference, WWW2007*, 1189–1190. <https://doi.org/10.1145/1242572.1242759>.
- [23] Kumar, N., Venugopal, D., Qiu, L., & Kumar, S. (2018). Detecting Review Manipulation on Online Platforms with Hierarchical Supervised Learning. *Journal of Management Information Systems*, 35(1), 350–380. <https://doi.org/10.1080/07421222.2018.1440758>.
- [24] Laan, M.J. van der, Polley, E.C., & Hubbard, A.E. (2007). *Super Learner* (Working Paper 222; U.C. Berkeley Division of Biostatistics Working Paper Series). <https://biostats.bepress.com/ucbbiostat/paper222>.
- [25] Lemaitre, G., Nogueira, F., & Aridas, C.K. (2017). Imbalanced-learn: A Python Toolbox to Tackle the Curse of Imbalanced Datasets in Machine Learning. *Journal of Machine Learning Research*, 18(17), 1–5. <http://jmlr.org/papers/v18/16–365>.

- [26] Li, F., Huang, M., Yang, Y., & Zhu, X. (2011). Learning to identify review spam. *IJCAI International Joint Conference on Artificial Intelligence*, 2488–2493. <https://doi.org/10.5591/978-1-57735-516-8/IJCAI11-414>.
- [27] Liu, Y. (2006). Word of Mouth for Movies: Its Dynamics and Impact on Box Office Revenue. *Journal of Marketing*, 70(3), 74–89. <http://www.jstor.org/stable/30162102>.
- [28] Lloyd, C.T., Sturrock, H.J.W., Leasure, D.R., Jochem, W.C., Lázár, A.N., & Tatem, A.J. (2020). Using GIS and Machine Learning to Classify Residential Status of Urban Buildings in Low and Middle Income Settings. *Remote Sensing*, 12(23), 3847. <https://doi.org/10.3390/rs12233847>.
- [29] Luca, M., & Zervas, G. (2016). Fake it till you make it: Reputation, competition, and yelp review fraud. *Management Science*, 62(12), 3412–3427. <https://doi.org/10.1287/mnsc.2015.2304>.
- [30] Mayzlin, D., Dover, Y., & Chevalier, J. (2014). Promotional Reviews: An Empirical Investigation of Online Review Manipulation. *American Economic Review*, 104(8), 2421–2455. <https://doi.org/10.1257/aer.104.8.2421>
- [31] Mukherjee, A., Kumar, A., Liu, B., Wang, J., Hsu, M., Castellanos, M., & Ghosh, R. (2013). Spotting opinion spammers using behavioral footprints. *Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Part F1288*, 632–640. <https://doi.org/10.1145/2487575.2487580>.
- [32] Ott, M., Cardie, C., & Hancock, J. (2012). Estimating the prevalence of deception in online review communities. *WWW'12 - Proceedings of the 21st Annual Conference on World Wide Web*, 201–210. <https://doi.org/10.1145/2187836.2187864>.
- [33] Patel, N.A., & Patel, R. (2018). A survey on fake review detection using machine learning techniques. *2018 4th International Conference on Computing Communication and Automation, ICCCA 2018*, 1–6. <https://doi.org/10.1109/CCAA.2018.8777594>.
- [34] Rayana, S., & Akoglu, L. (2015). Collective opinion spam detection: Bridging review networks and metadata. *Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 2015-Augus*, 985–994. <https://doi.org/10.1145/2783258.2783370>.
- [35] Rudolph, S. (2015). *The Impact of Online Reviews on Customers' Buying Decisions [Infographic]*. <http://www.business2community.com/infographics/impact-onlinereviews-customers-buying-decisions-infographic-01280945#oaFtOjCMhi5CD7de.97>.
- [36] Simonson, I. (2016). Imperfect Progress: An Objective Quality Assessment of the Role of User Reviews in Consumer Decision Making, A Commentary on de Langhe, Fernbach, and Lichtenstein. *Journal of Consumer Research*, 42(6), 840–845. <https://doi.org/10.1093/jcr/ucv091>
- [37] Sonobe, R., Yamaya, Y., Tani, H., Wang, X., Kobayashi, N., & Mochizuki, K. (2018). Crop classification from Sentinel-2-derived vegetation indices using ensemble learning. *Journal of Applied Remote Sensing*, 12(02), 1. <https://doi.org/10.1117/1.JRS.12.026019>.
- [38] Vidanagama, D.U., Silva, T.P., & Karunananda, A.S. (2020). Deceptive consumer review detection: a survey. *Artificial Intelligence Review*, 53(2), 1323–1352. <https://doi.org/10.1007/s10462-019-09697-5>.
- [39] Wu, Y., Ngai, E.W.T., Wu, P., & Wu, C. (2020). Fake online reviews: Literature review, synthesis, and directions for future research. *Decision Support Systems*, February, 113280. <https://doi.org/10.1016/j.dss.2020.113280>
- [40] Zhang, D., Zhou, L., Kehoe, J.L., & Kilic, I.Y. (2016). What Online Reviewer Behaviors Really Matter? Effects of Verbal and Nonverbal Behaviors on Detection of Fake Online Reviews. *Journal of Management Information Systems*, 33(2), 456–481. <https://doi.org/10.1080/07421222.2016.1205907>

02

Prediction of Fraud in Financial Payment System

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Abstract: To develop a robust model to detect fraudulent transactions before authorisation of the same, we first studied related literature and used simulated data from Kaggle to develop a suitable model. We developed several models and the cardinal features of these models are as follow-

- **Logistic Regression:** Since our dependent variable was binary, we applied logistic regression which was easy in application, but our efficiency was low.
- **Decision Tree:** We applied this method since it does not require normalisation and scaling of data and any observation removed during data cleaning will not affect our result.
- **Random Forest:** Finally, for higher accuracy and cross validation, we applied a random forest. The method automatically substitutes for missing values and multiple decision trees. We found this method very suitable for predicting fraud, and we recommend this method for detecting fraud beforehand.

As our reviewed literature shows that financial institutions bear the most of the brunt of fraud our model can detect the fraud before it happens and save the financial institutions the cost related to the investigation and subsequent litigation fee associated with criminal proceedings.

PROBLEM STATEMENT AND MOTIVATION

As the internet is becoming ubiquitous, so are the financial transactions. In post COVID-19 world, people are chary of handling cash as it may spread the virus. People prefer using online mode of transactions like a credit card, debit card, e-wallets, online banking, IMPS, mobile banking etc.

Increase in online transactions increased the opportunity for fraudsters to steal the credentials of gullible users by phishing, skimming, SIM card swapping, intercepting email information for newly issued cards, collusion with employees of the companies providing financial services etc.

The maximum loss due to fraudulent transactions is born by card issuer, merchant and banks because the cardholder is usually insured against fraudulent transactions to

some extent. Frequent frauds lead to loss of reputation of the bank and merchant. The banks also bear the administrative cost of investigation for fraudulent transactions.

Even though the financial institutions usually require authentication in the form of OTP, biometrics, personal identification number (PIN), password etc. once this form of authentication is compromised the existing system is unable to detect and prevent the fraudulent transaction.

If we can detect the fraudulent transaction on time, we can save a significant amount of time, money and goodwill for all the related parties of the transaction. Fraud detection models can be developed and trained on a data set of past transactions. Once a model with the desired accuracy has been developed, it can be deployed to detect fraudulent transactions.

The biggest hurdle in developing this kind of models is the unavailability of past data due to the maintenance of confidentiality of past transaction for regulatory compliance. To overcome this problem, several simulated data sets have been developed to train the models.

REVIEW OF RELATED LITERATURE

The need and requirement of detecting fraudulent transactions on time have been tackled by the researcher's time and again several times. Some of the notable works on which we were able to lay our hands are summarised below.

Jon T. S. Quah and M. Sriganesh developed a technique based on the neural network called self-organising maps (SOM). The technique was very effective and economical. The approach has been summarised in the following diagram.

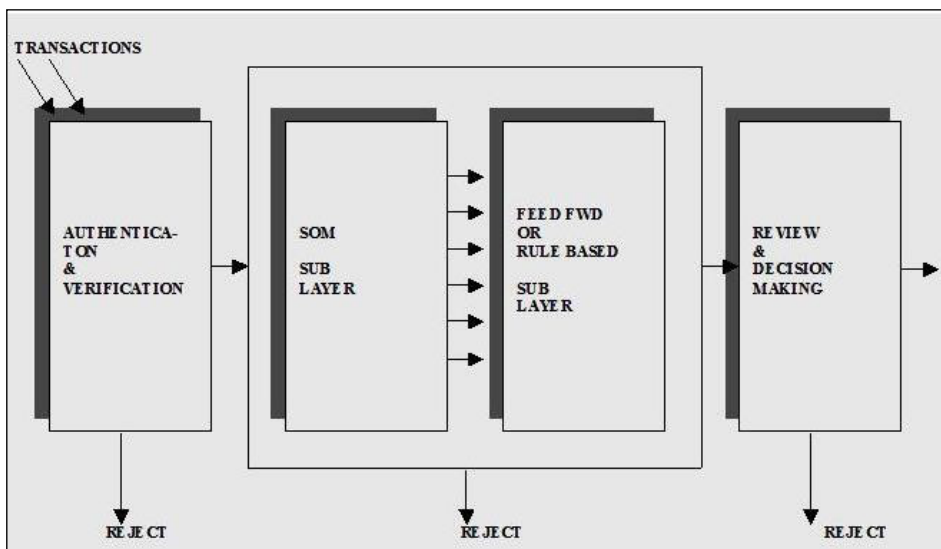


Fig. 1: Real-Time Credit Card Fraud Detection using Computational Intelligence

These researchers developed a layered approach that was very effective and practical in preventing fraudulent financial transactions.

Edgar Alonso Lopez-Rojas, Stefan Axelsson, Dejan Baca in their paper *Analysis of Fraud Controls Using the PaySim Financial Simulator* developed a model based on Multi-Agent based Simulation (MABS) to detect frauds related Mobile Money Transfers in the African countries.

Zhaohui Zhang, Xinxin Zhou, Xiaobo Zhang, LizhiWang and PengweiWang in the research article *A Model Based on Convolutional Neural Network for Online Transaction Fraud Detection* developed a model to detect fraudulent online transactions. This Convolutional Neural Network (CNN) model was based on feature rearrangement with good performance and stability. The model was based on the concept that each fraudulent transaction has some trading features and rearrangement of these features don't alter the physical meaning of the transaction.

Diadiushkin, Alexander & Sandkuhl, Kurt & Maiatin, Alexander. (2019). Fraud Detection in Payments Transactions: Overview of Existing Approaches and Usage for Instant Payments. *Complex Systems Informatics and Modeling Quarterly*. The paper gave an insight into the transfer of manual jobs to the digital frame. With the network of instant payments and ease comes a risk of frauds due to the short time frame in which the entire transaction is processed. AI can be used to avoid these frauds to a great extent.

Ezukeoke, Kenneth & Zareian, Samaneh. (2019). Logistic Regression and Kernel Logistic Regression A comparative study of logistic regression and kernel logistic regression for binary classification. de la Cruz, Marcelino. (2005). Improving the Presentation of Results of Logistic Regression with R. *Bulletin of the Ecological Society of America*. 86. To check for the logistic regression methods and to see the important deductions and present them in a way that its easier for everyone to understand.

Patel, Harsh & Prajapati, Purvi. (2018). Study and Analysis of Decision Tree-Based Classification Algorithms. *International Journal of Computer Sciences and Engineering*. A Survey on Decision Tree Algorithms of Classification in Data Mining. To help us understand the usage of decision tree and its usage in algorithms, also to understand how to use high volumes of data during our study.

Ali, Jehad & Khan, Rehanullah & Ahmad, Nasir & Maqsood, Imran. (2012). Random Forests and Decision Trees. A comparison of random forest-based algorithms: random credal random forest versus oblique random forest. *Soft Computing*. 23. To understand the random forest method and algorithms based on it, also the comparison with other methods.

Devi Meenakshi, Janani, Gayathri, Mrs Indira. Credit Card Fraud Detection Using Random Forest. This research paper went into details on credit card

fraud detection and how random forest can be used to accurately make predictions on it. This paper helped us understand how the classification process of random forest can be used to analyse data set and graphically visualise the results.

Detecting Credit Card Fraud by Decision Trees and Support Vector Machines. Y. Sahin and E. Duman. In this research paper, classification models based on decision trees and support vector machines (SVM) are developed and applied on credit card fraud detection problem. This research paper helped us analyse datasets and develop models using a decision tree.

We also went through some reports generated by leading companies like Deloitte, KPMG, PWC, McKinsey, IIM Bangalore, RBI etc. And some other research papers, online readings and reference are mentioned in the bibliography as well.

INDIAN CONTEXT/OUR CONTEXT

The total number of financial frauds in India was valued at more than Rs 1.85 lakh crore in FY 19-20 in comparison to Rs 71,500 crore in FY 18-19, data according to the RBI's annual report for 2019-20. Private banks have recorded a rise of over 500%, that forms over 18% of the total fraud cases. Out of this, a major chunk of frauds associated with end-users or individuals is mostly related to payment systems. According to a report by Statista, the number of payments executed through mobile banking was approx. 6.2 billion in 2019. As per a study conducted by Facebook and The Boston Consulting Group (BCG) and an article in financial express, the number of users choosing to use online banking instead of offline/bank visits is expected to double from 2019 to reach 150 million by the end of 2020. According to data published by RBI (2020) on their website regarding the ATM/POS/ Card statistics: the number of transactions actual of a credit card (total for all banks) were 689402 by ATM and 114753201 by POS, the number of transactions actual of debit card (total for all banks) was 718276986 by ATM and 282007092 by POS. The above statistics highlight the volume of digital transactions in India and draw our attention toward the possible threat of payment frauds that the users are exposed to in the absence of proper detection method or prediction system.

The issue is so concerning that RBI has also taken the initiative in this context and RBI's Payment System Vision 2021 will contain a framework for a collection of data on frauds in the payment systems. According to the RBI, access will be given to the Payment system participants in order to enter this registry for near-real-time fraud monitoring. They have also realised the importance of monitoring and fraud prediction in the era of increasing dependence on digital payments and its increasing volume. Several news agencies and media houses have also informed the users against the threat of frauds in print media, social media etc. Through articles and publications, efforts are being made to make the user more aware of the basic things and precautions to avoid such frauds, but there is no robust system to control them or to stop them from happening.

Also, the rules and cyber laws are laid out for a scenario post a fraud is committed, but there is no information on the likeliness of occurrence of fraud or its prediction in advance to save the user from falling prey. Thus, our project aims to check the use of prediction method in R and to analyse its use in the context of fraud prediction in payments. If this system is implemented on a large scale by banks and other agencies, then a lot of hassle and frauds can be predicted well in advance, and innocent users can be saved.

DATA PREPARATION

For our modelling, we have used the Paysim dataset available on Kaggle. The dataset has 6362620 rows of information on mobile money transactions which are based on a sample of real transactions. These transactions are extracted from one month of financial logs from a mobile money service implemented in an African country. The dataset has 11 columns of data available related to the transaction. These are (Paysim1, n.d.)

- **Step** - maps a unit of time in the real world. In this case, 1 step is 1 hour of time. Total steps 744 (30 days of a simulation).
- **Type** - CASH-IN, CASH-OUT, DEBIT, PAYMENT and TRANSFER.
- **amount** - the amount of the transaction in local currency.
- **nameOrig** - the customer who started the transaction.
- **oldbalanceOrig** - initial balance before the transaction.
- **newbalanceOrig** - new balance after the transaction.
- **nameDest** - the customer who is the recipient of the transaction.
- **oldbalanceDest** - initial balance recipient before the transaction. Note that there is not information for customers that start with M (Merchants).
- **newbalanceDest** - new balance recipient after the transaction. Note that there is not information for customers that start with M (Merchants).
- **isFraud** - This is the transactions made by the fraudulent agents inside the simulation. In this specific dataset, the fraudulent behaviour of the agents aims to profit by taking control or customers' accounts and try to empty the funds by transferring to another account and then cashing out of the system.
- **isFlaggedFraud** - The business model aims to control massive transfers from one account to another and flags illegal attempts. An illegal attempt in this dataset is an attempt to transfer more than 200.000 in a single transaction

The reasons for choosing this dataset is to conduct fraud analysis on mobile payment systems which have been on the rise among customers in recent years. Thanks to that, a person with malicious intentions are looking for loopholes to exploit the system. This analysis can help to develop a model which can minimise such security issues.

Before beginning our operations on the dataset, it is necessary to clean the dataset of null values, white spaces and missing values to maintain consistency and avoid unnecessary processing errors. For this, the team loaded the dataset on R and checked for its summary. From the summary, we could conclude the dataset had no missing or null values and as such, required no operation on them.

```
[1] "step"           "type"           "amount"         "nameOrig"       "oldbalanceOrg"  "newbalanceOrig"
[7] "nameDest"       "oldbalanceDest" "newbalanceDest" "isFraud"        "isFlaggedFraud" "newbalanceOrig"
```

Parameters in the dataset

step	type	amount	nameOrig	oldbalanceOrg	newbalanceOrig
Min. : 1.0	Length:6362620	Min. : 0	Length:6362620	Min. : 0	Min. : 0
1st Qu.:156.0	Class :character	1st Qu.: 13390	Class :character	1st Qu.: 0	1st Qu.: 0
Median :239.0	Mode :character	Median : 74872	Mode :character	Median : 14208	Median : 0
Mean :243.4		Mean : 179862		Mean : 833883	Mean : 855114
3rd Qu.:335.0		3rd Qu.: 208721		3rd Qu.: 107315	3rd Qu.: 144258
Max. :743.0		Max. :92445517		Max. :59585040	Max. :49585040
nameDest	oldbalanceDest	newbalanceDest	isFraud	isFlaggedFraud	
Length:6362620	Min. : 0	Min. : 0	Min. :0.000000	Min. :0.0e+00	
Class :character	1st Qu.: 0	1st Qu.: 0	1st Qu.:0.000000	1st Qu.:0.0e+00	
Mode :character	Median : 132706	Median : 214661	Median :0.000000	Median :0.0e+00	
	Mean : 1100702	Mean : 1224996	Mean :0.001291	Mean :2.5e-06	
	3rd Qu.: 943037	3rd Qu.: 1111909	3rd Qu.:0.000000	3rd Qu.:0.0e+00	
	Max. :356015889	Max. :356179279	Max. :1.000000	Max. :1.0e+00	

Summary of the dataset

Fig. 2

Next, to reduce processing time, we skimmed the data to 10%, i.e. 636262 rows. Then we conducted a univariate analysis on both the continuous and discrete variables in the dataset.

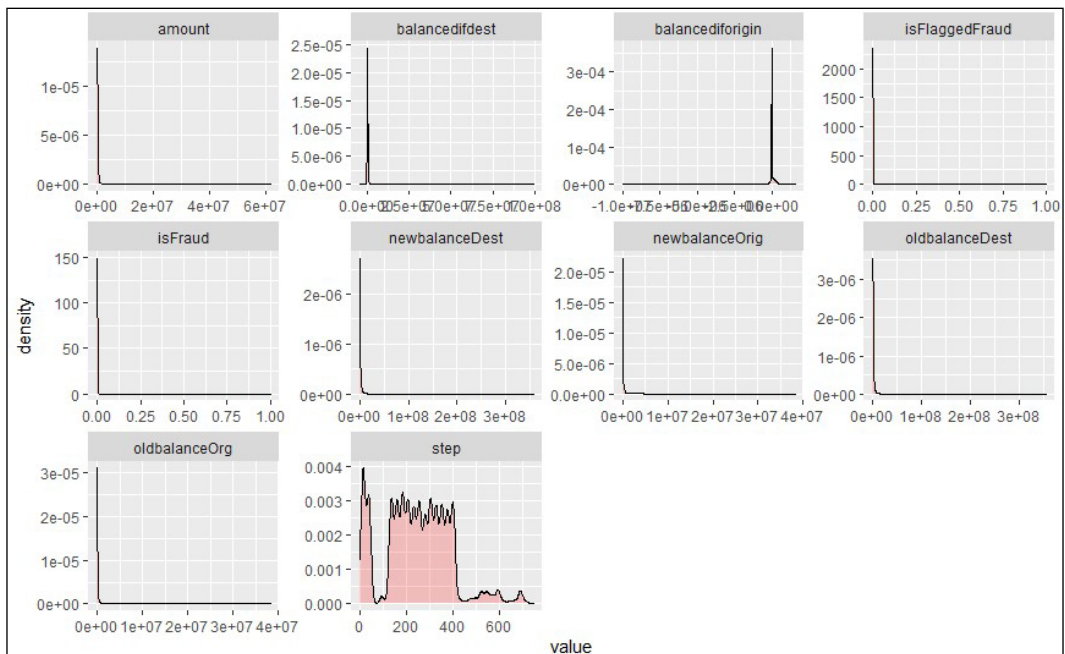


Fig. 3

After identifying population density based on parameters, we also plotted ggplots to recognise frauds and transactions based on type. Next, we needed to recognise trends among frauds to build our model. For this, we plotted frauds and transactions based on the period of time. Based on which we recognised the time period during which the occurrence of fraud had a higher probability. We also recognise mean and max amounts and the tendency of fraudsters in stealing the whole amount at once. Finally, the correlation between variables was also determined to remove variables which are interdependent and are less significant via correlation matrix. (The inferences from the plots are mentioned in the results section)

METHODOLOGY

After the analysis in the previous section, we decided to proceed with multiple methods which can support relationships between discrete variables and can be used to predict them.

First, we started with logistic regression with IsFraud as the dependent variable and step, type, new balance amount as the independent parameters. The reason for choosing this method lies in the fact that our dependent variable is binary. It also supports categorising the data into discrete classes by studying the correlation between parameters. Advantages of choosing logistic regression in this scenario are the ease of training data using this method and the fact that it provides information on the direction of association of a predictor. The issues we can run into is the inherent linear assumption between parameters by this modelling process. It can sometimes lead to overfitting of data.

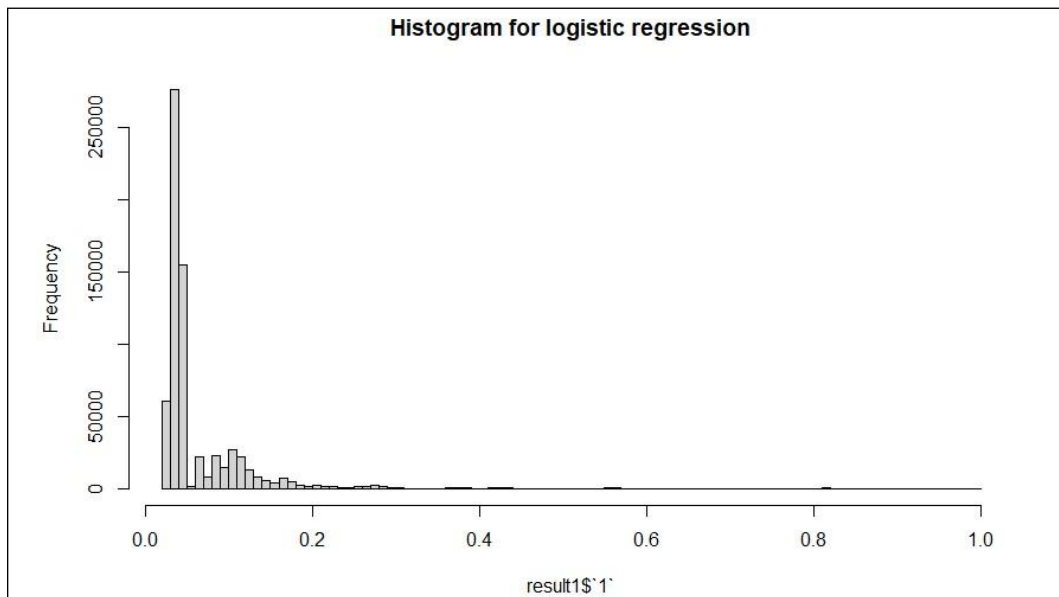


Fig. 4

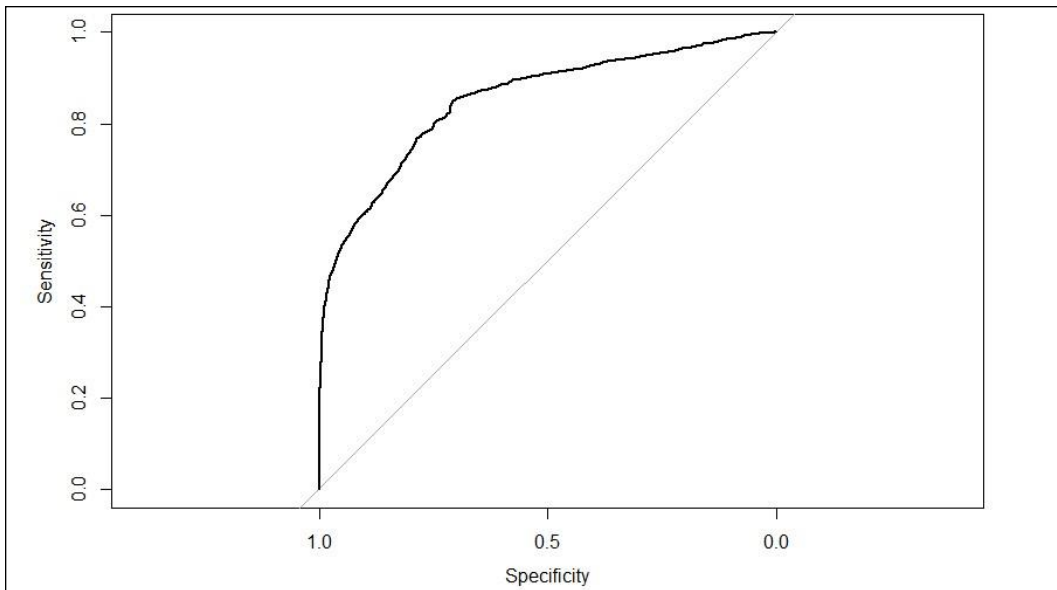


Fig. 5

Another alternative modelling method followed by us was the decision tree. This helps us visualise the impact of the decisions made and how a correct or incorrect prediction affects us. Advantages of this method lie in the fact that the method does not require normalisation or scaling of data ensuring any missed data cleaning does not affect our final result. The disadvantage observed is in the processing time for training and making calculations.

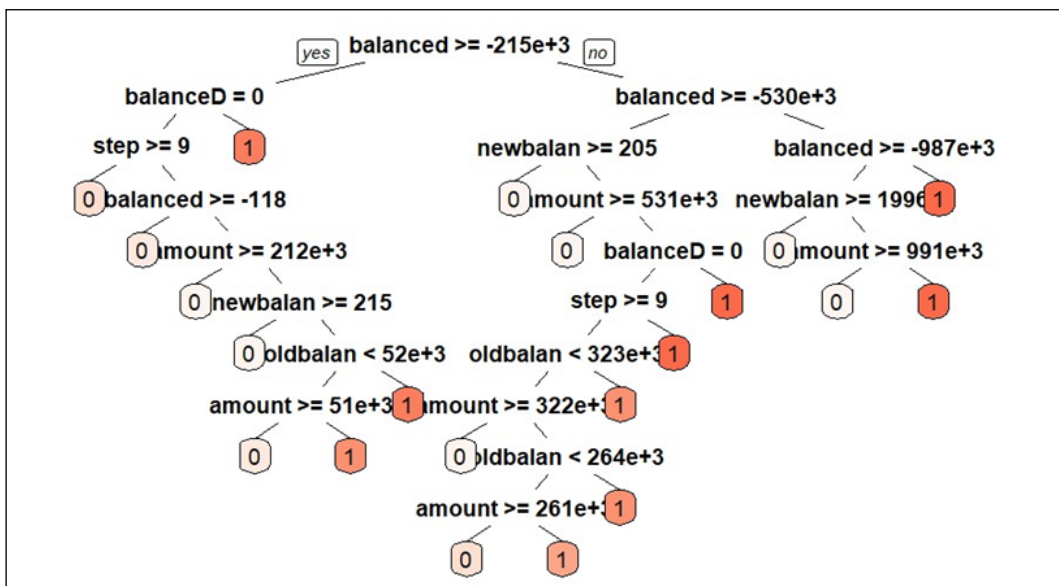


Fig. 6

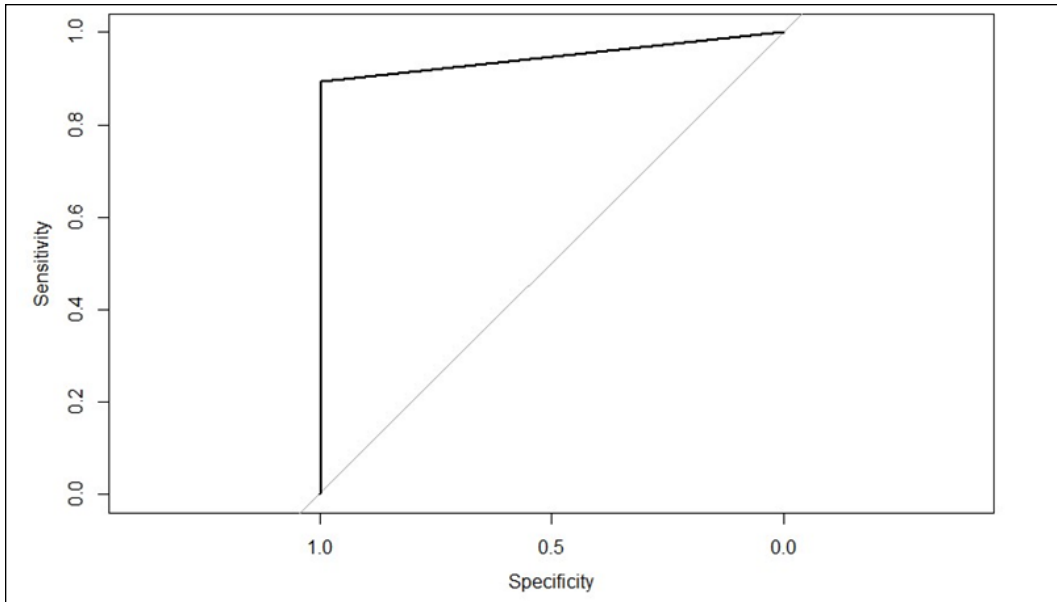


Fig. 7

The final model used for prediction is Random Forest. The reason for this is to implement cross-validation in our model and try for higher accuracy. Advantages lie in the fact that it can automatically substitute missing values. It also uses multiple decision trees so more accurate calculation. However, the processing time is always a deterrent in choosing this method.

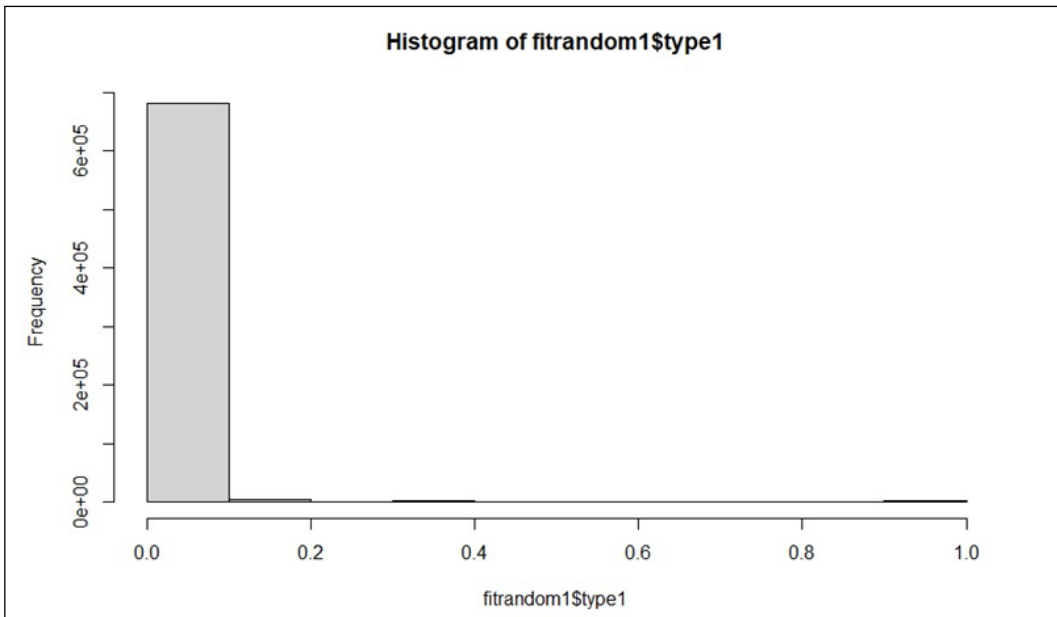


Fig. 8

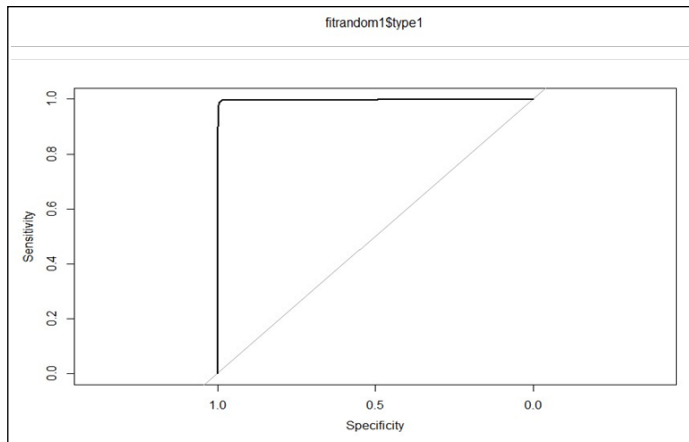


Fig. 9

After comparing the results from all the three models, we had observed random forest to have the highest accuracy (inferences and plots in results and discussion section) and decided to proceed with it for our final forecasting on the test data.

RESULTS AND DISCUSSION (COVERS DATA CLEANING, ANALYSING AND MODELLING RESULTS)

To build our model trends regarding frauds, payment type and the amount needed to be recognised. For this, we designed multiple plots, inferences from which gave us an idea of parameters to consider while building our model and extra observations which can be recommended to the stakeholders.

DATA ANALYSIS

First, we plotted the exhibiting graph transactions by type and transactions by type only in case of fraud.

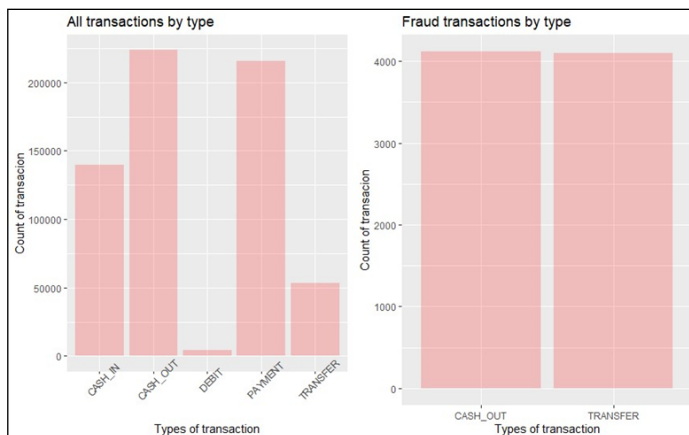


Fig. 10

From this, we could infer that Paysim suffered frauds only in case of CASH OUT and TRANSFER payment types.

Next, we plotted the transaction counts in periods of 5 to recognise any trend in fraud and timing of data when it is executed.

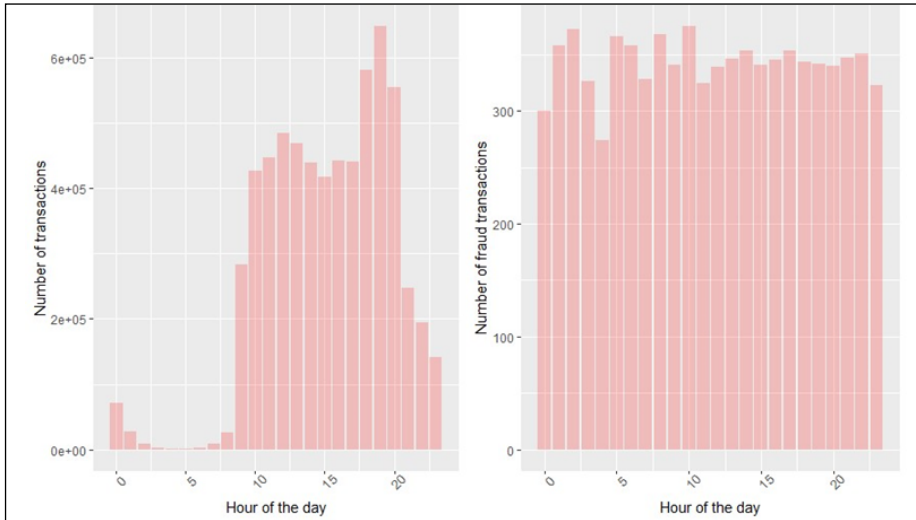


Fig. 11

Above plot helps us to infer that transactions executed are higher during the day compared to early morning or late-night hours. On the other frauds are pretty uniform irrespective of the time of the day. From this, we can infer that the probability of fraud is higher in the 0-8 period and 21-24 period of the day.

Similarly, we tried to analyse the amounts that are transferred during frauds and the range of amount available in the actual dataset considered. The range lies between 0 and 92,445,517 while the mean of fraud was found to be 1467967.29914039 currency units.

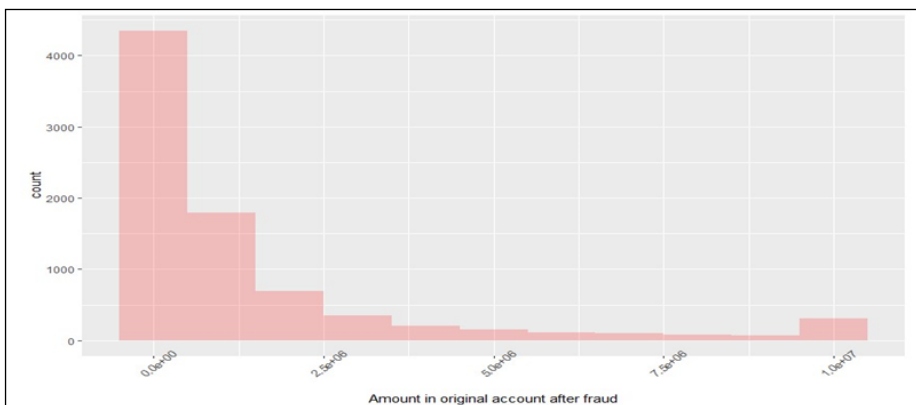


Fig. 12

From this, we could incur that most of the times, the entire amount gets transferred from the original data. The mean percentage stolen during fraud was found to be 88.98%.

Next, we tried to develop fraud profiles based on our dataset. This can be used to analyse the existing fraud flagging system and vulnerabilities in it.

<pre># A tibble: 7 x 3 # Groups: type [5] type isFraud count <chr> <int> <int> 1 CASH_IN 0 1399284 2 CASH_OUT 0 2233384 3 CASH_OUT 1 4116 4 DEBIT 0 41432 5 PAYMENT 0 2151495 6 TRANSFER 0 528812 7 TRANSFER 1 4097</pre>				<pre># A tibble: 8 x 4 # Groups: type, isFraud [7] type isFraud isFlaggedFraud count <chr> <int> <int> <int> 1 CASH_IN 0 0 1399284 2 CASH_OUT 0 0 2233384 3 CASH_OUT 1 0 4116 4 DEBIT 0 0 41432 5 PAYMENT 0 0 2151495 6 TRANSFER 0 0 528812 7 TRANSFER 1 0 4081 8 TRANSFER 1 1 16</pre>			
---	--	--	--	---	--	--	--

Fig. 13

We find that only CASH_OUT and TRANSFERS have fraud cases. The fraud flagging technology is not working as intended as it has only flagged frauds 16 times in the data.

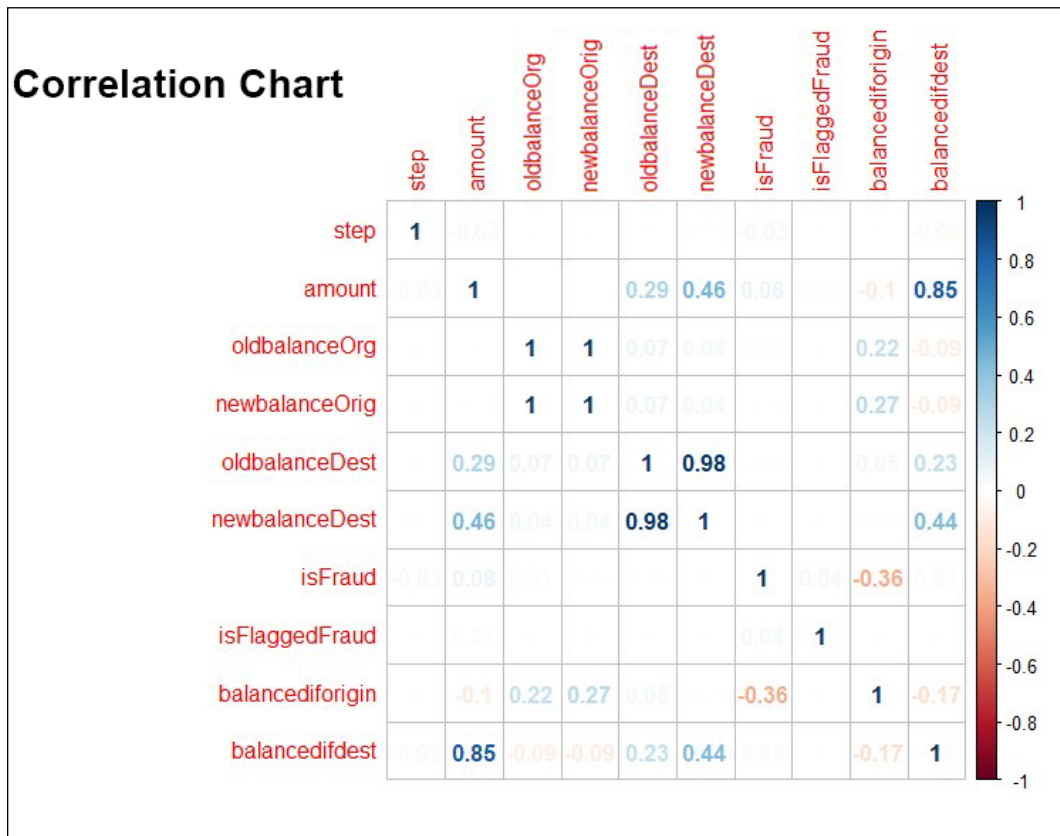


Fig. 14

Next, we design a correlation matrix which did not exhibit much correlation for IsFraud. Then, we calculated the fraud spreads, which is 0.184% in case of cash out and 0.769% in case of transfer. We also observe the dataset has 0.12% instances of fraud in total data.

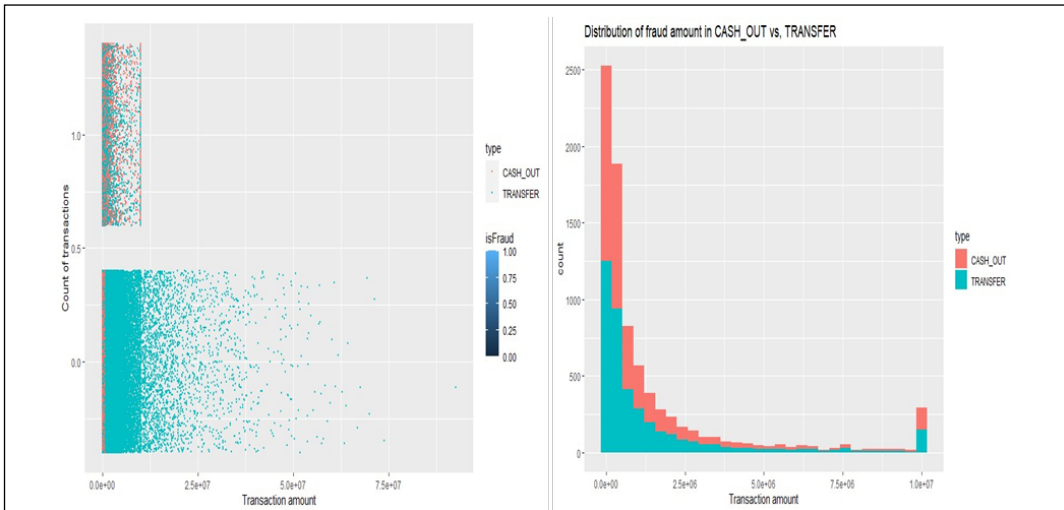


Fig. 15

We can infer from this plot that fraud is occurring at a small amount and mostly for transfer payment. Based on the above analysis, we decided to remove columns which are irrelevant or columns like destination and origin since frauds in the dataset exhibited occurrence of only once on a single account.

Next, we considered a variable balance original state which stored the sign of the difference between new balance and old balance at the origin. Similarly, assume another variable which stores the destination amount difference before and after a transaction. The cross tables below help us to interpret instances of money stolen completely, positive instances of differences and more.

Cell Contents							
N / Row Total				N / Row Total			
Total observations in Table: 2770409				Total observations in Table: 2770409			
a\$balanceorigstate	a\$IsFraud 0	1	Row Total	a\$balanceDestState	a\$IsFraud 0	1	Row Total
Negative	1453650 0.994	8156 0.006	1461806 0.528	Negative	42924 0.999	27 0.001	42951 0.016
Positive	2 1.000	0 0.000	2 0.000	Positive	2717566 0.998	4100 0.002	2721666 0.982
Zero	1308544 1.000	57 0.000	1308601 0.472	Zero	1706 0.295	4086 0.705	5792 0.002
column Total	2762196	8213	2770409	column Total	2762196	8213	2770409

Fig. 16

DATA MODELLING

Finally, we ready to model our dataset. So, we decided to break the dataset into training and test data. It was divided into the ratio 75:25. The dataset was processed using three methodologies Logistic regression, decision trees, random forest, as mentioned in the methodology section.

```
call:
summary.resamples(object = results)

Models: decision_tree, logistic_regression, random_forest
Number of resamples: 5
```

Accuracy	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's
decision_tree	0.9805721	0.9811960	0.9828892	0.9824793	0.9832457	0.9844934	0
logistic_regression	0.9226450	0.9229124	0.9230015	0.9238927	0.9250512	0.9258533	0
random_forest	0.9928705	0.9934943	0.9935835	0.9939221	0.9948311	0.9948311	0

Kappa	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's
decision_tree	0.8946796	0.8988642	0.9089613	0.9061236	0.9109240	0.9171890	0
logistic_regression	0.4770804	0.4824176	0.4868689	0.4913791	0.5020306	0.5084981	0
random_forest	0.9633979	0.9663233	0.9669635	0.9687030	0.9732914	0.9735392	0

Fig. 17

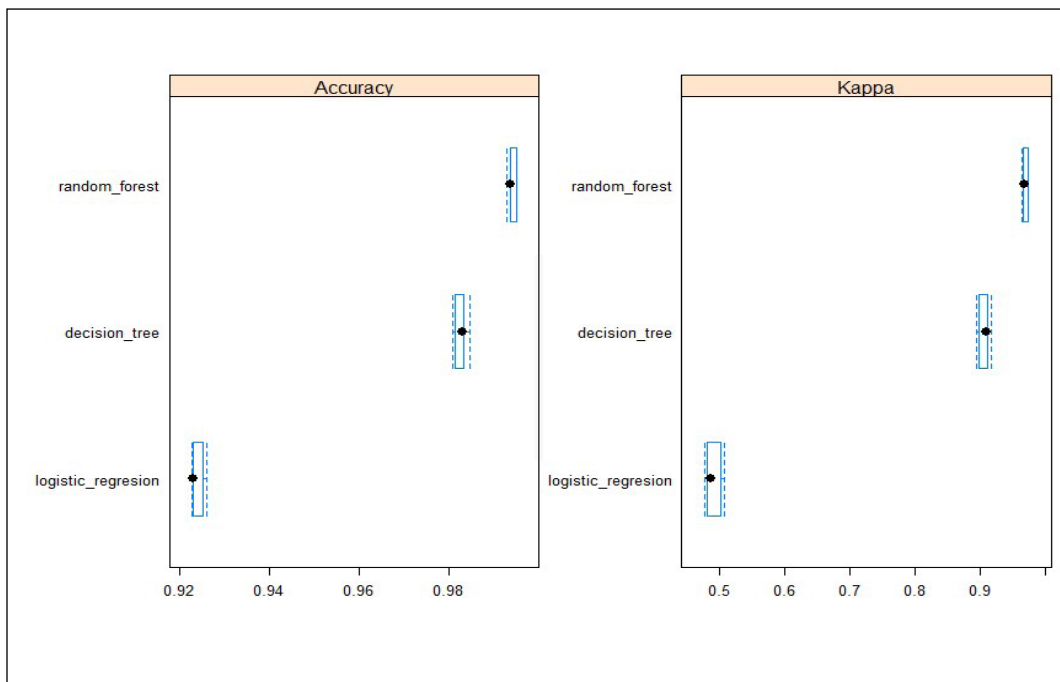
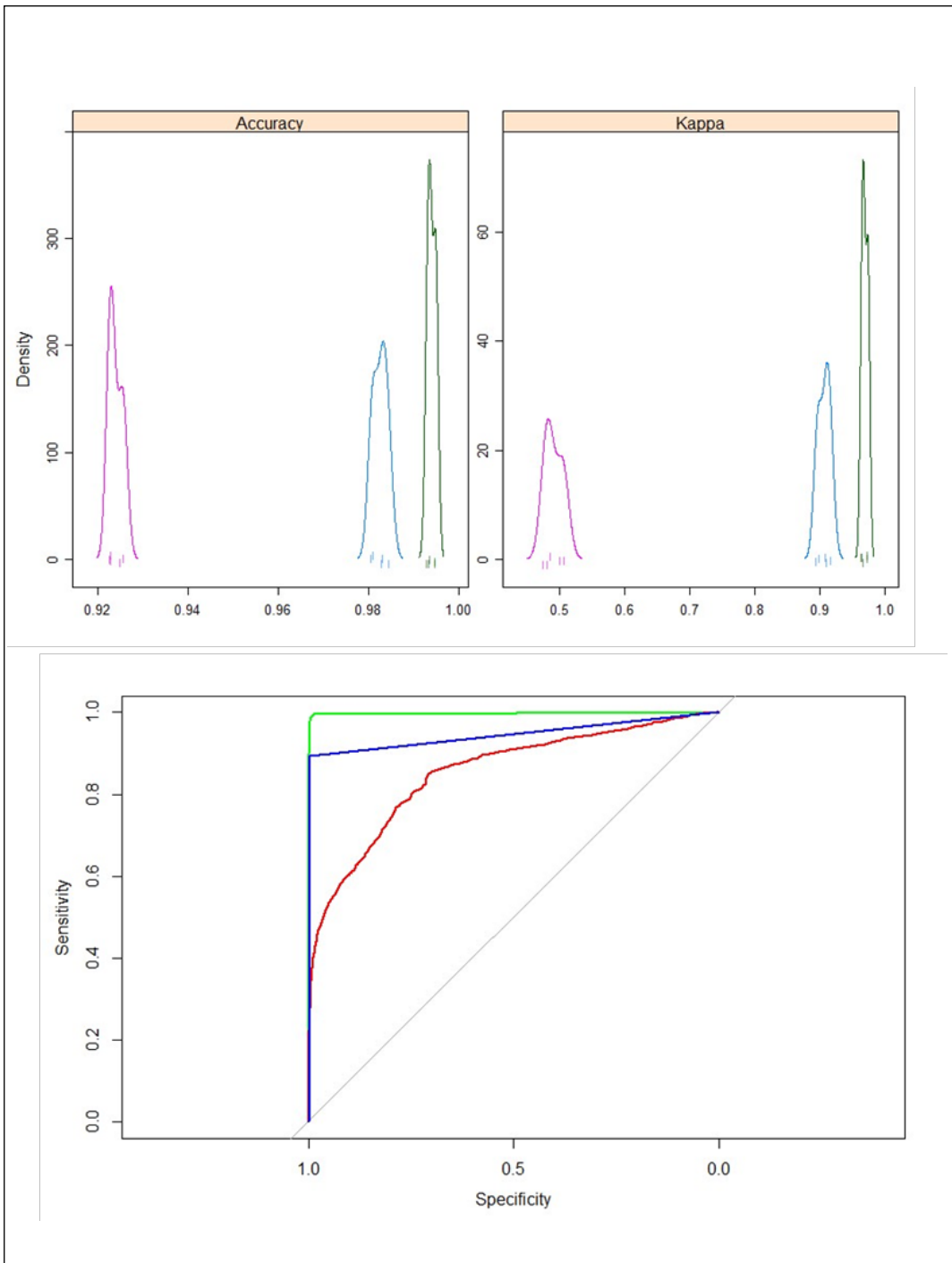


Fig. 18

**Fig. 19**

From all the above plots and calculations, it is pretty easy to conclude that random forest is the best model of the three and should be preferred for further testing.

FINAL TESTING AND C

For testing our model, we needed a cutoff value/threshold. For this, we decided to use a loop to calculate threshold cutoff based on the lowest losses in terms of wrong predictions. Finally, we created a confusion matrix to calculate important parameters like Accuracy, Error Rate, Specificity, Sensitivity, False Positive Rate and Precision.

```
> threshold
[1] 0.01
> lowest
[1] -2613470951
```

Threshold Output

```
> #Accuracy
> Rf.ACC
[1] 0.9869377
> #Error Rate
> Rf.ER
[1] 0.01306234
> #Sensitivity /Recall Rate
> Rf.TPR
[1] 0.9947818
> #Specificity
> Rf.TNR
[1] 0.9869137
> #Precision
> Rf.P
[1] 0.1883589
> #False positive rate
> Rf.FPR
[1] 0.01308628
```

Confusion Matrix Output

From above snips, we can infer that the best threshold was around 1%. The model has an accuracy of 98% in making the predictions. Also, high values of sensitivity 99.4% and specificity 98.6% contribute towards the conclusion that the model is well built.

BUSINESS IMPLICATIONS

Financial frauds and especially transaction and cash out frauds affect the bottom line of any business and lead to an unpredicted financial burden on the company. If a company is involved with the selling of products then due to fraud, they must bear the cost of retransfer of goods/money. The reputation of the company is affected by frauds and leads to a loss of trust by the customer, which affects the likelihood of returning to the company that, in turn, affects the future scope of growth.

Detection of frauds at an early stage or prediction beforehand will lead to a trust factor among users and will help sustain in the market with trust on technology and ease of making payments. A secure system attracts more users and volume of the transaction also increases thereby increasing the future scope to tap into more market share and will lead to more people to switch from traditional modes of payment of cashless or

online methods. The economy can become more open for digital and easy modes of money transfer and transactions by including better firewall systems and prediction mechanism to stop fraudulent activities before they can occur.

FUTURE SCOPE AND FURTHER SCOPE OF IMPROVEMENT

Future scope of our project can have wide application in practical transactions to predict the risk of a fraudulent payment/transaction to save the money. Also, to analyse the security aspect of any form of payment system before using it. It is a proactive measure to catch fraud before it can occur and to take appropriate measures to reduce it. More methods, like neural networks, can be applied to develop a more accurate model in the future. We also observed very low precision of 18.8% in our model even though it has high accuracy. This can be worked upon in future models.

CONCLUSION

During our study, we analysed the various aspects related to financial frauds in payment systems and the impact they create on the customer and institution as a whole. Using our understanding of the various models learnt in our course on financial analytic using R, we performed data analysis using methods such as univariate analysis, correlation matrix, crosstables etc. And on the basis of observations, we were able to make a robust model predict the frauds before they can occur and send an alert beforehand on any discrepancy observed so that it doesn't result in a financial loss. During our study, we used three models to check the efficiency of prediction. The first method used was logistic regression, and we concluded from the analysis that the efficiency of prediction was 92.48%. Next we used the decision tree method which was able to deliver an efficiency of 98.37% in predicting the frauds. The last method we used was the random forest method which predicted the occurrence of fraud with an efficiency of 99.3% with high values of specificity and sensitivity demonstrating that the model is built well and can be used for a practical purpose.

REFERENCES

- [1] Dataset : <https://www.kaggle.com/ntnu-testimon/paysim1>.
- [2] <https://www2.deloitte.com/content/dam/Deloitte/in/Documents/finance/in-financeDeloitteIndiaBankingFraudSurveyIII-noexp.pdf>.
- [3] <https://www.bloombergquint.com/business/rbi-annual-report-2019-20-bank-frauds-morethan-double#:~:text=Bank%20frauds%20worth%20more%20than,annual%20report%20for%202019%2D20.&text=Private%20banks%2C%20which%20reported%20a,of%20the%20total%20fraud%20cases>.
- [4] PwC and Assocham (2014). "Growing NPAs in Banks: Efficacy of Credit Rating Agencies".
- [5] Carney, M. (2014). "Inclusive Capitalism: creating a sense of the systemic", Speech given by Mark Carney, Governor of the Bank of England at the Conference on Inclusive Capitalism, London 27 May 2014.

- [6] Deloitte (2014), “*India Fraud Survey*, Edition 1”.
- [7] Deloitte (2015), “*Deloitte India Banking Fraud Survey*”.
- [8] European Central Bank, “Glossary of terms related to payment, clearing and settlement systems,” 2009. [Online] Available: <https://www.ecb.europa.eu/pub/pdf/other/glossaryrelatedtopaymentclearingandsettlementsyst emsen.pdf>.
- [9] European Central Bank, “*Instant Payments*,” 2019. [Online]. Available: <https://www.ecb.europa.eu/paym/retpaym/instant/html/index.en.html>.
- [10] P. S. Patil and N. V. Dharwadkar, “Analysis of banking data using machine learning,” *Proc. of the International Conference on IoT in Social, Mobile, Analytics and Cloud, I-SMAC 2017*, pp. 876–881, 2017. Available: <https://doi.org/10.1109/I-SMAC.2017.8058305> <https://www.livemint.com/money/personal-finance/rbi-to-set-up-central-registry-for-trackingfrauds-in-payment-systems-1565159863289.html>.
- [11] <https://economictimes.indiatimes.com/markets/stocks/news/central-registry-to-track-frauds-in-payment-systems/articleshow/70582504.cms?from=mdr>.
- [12] <https://www.statista.com/statistics/870487/india-mobile-banking-payment-volume/>
- [13] <https://www.frontiersin.org/articles/10.3389/fnagi.2017.00329/full> .
- [14] <https://www.rbi.org.in/scripts/ATMView.aspx?atmid=84>.

Efficient Portfolio Structure of Hybrid Mutual Fund: An Indian Perspective

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Abstract: This study aims at to determine the portfolio optimization of Indian Hybrid Mutual Funds based on risk and return trade of parameters while allocating the weights dynamically. All the Hybrid Mutual Funds with inception before April 2015 are considered and monthly returns during April 2015 – March 2020 are calculated. Some mutual funds are then eliminated due to i) negative return or ii) negative skewness of return. Since the performance of a mutual fund is compared with respect to the market, the portfolio is, then, constructed by taking the funds with low standard deviation (a measure of risk) and high beta value (a measure of funds' performance with the market). BSE 100 is taken as the market benchmark and their monthly returns for the same period are calculated. Then, appropriate weightage has been allocated among the funds belonging to the portfolio by using the Generalized Reduced Gradient method. Finally, the results are validated by finding the efficiency scores of the selected funds using Data Envelopment Analysis. This research study will help the investors to select efficient mutual funds which will help them for taking future investment policies.

Keywords: Hybrid Mutual Funds, Risk, Return, Skewness, Portfolio, Generalized Reduced Gradient Method, Data Envelopment Analysis.

JEL Code: C44, C61, D25, D53, D61, E22, G11, G51.

INTRODUCTION

A mutual fund is a type of financial vehicle made up of a pool of money collected from many investors to invest in securities like stocks, bonds, money market instruments, and other assets. Mutual funds are operated by professional money managers, who allocate the fund's assets to produce income for the fund's investors.

An investor's goal is to raise his/her wealth, which one may achieve by investing in stock markets etc. However, these investments involve high risk along with a certain level of return. In such a situation, mutual funds play an important role. They pool money from various investors and invest it in the stock market. They are professionally

managed and uses advanced statistical tools to create a portfolio of their own striking a perfect balance between returns and risk, which is not possible for an individual investor. The wealth generated from these investments is then distributed to the shareholders.

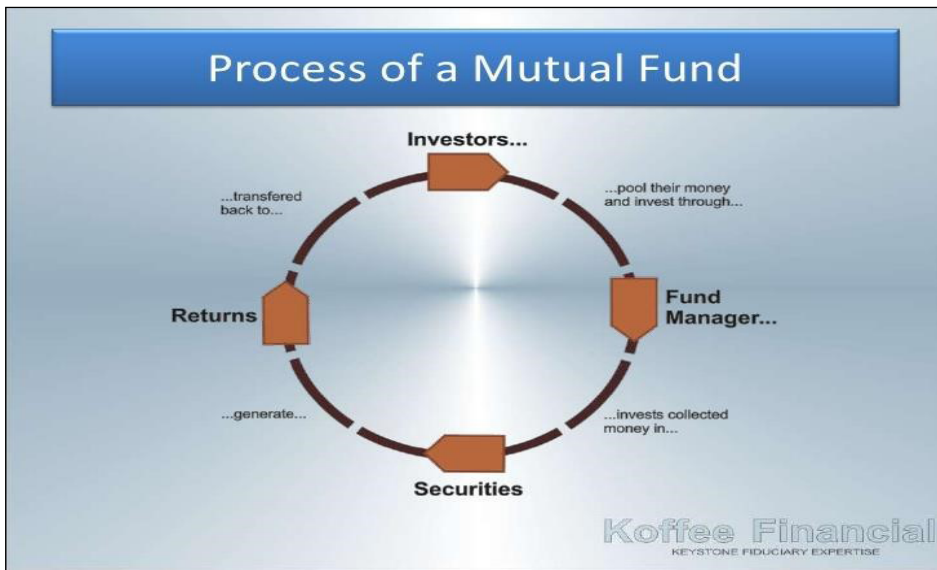


Fig. 1

The mutual fund industry in India commenced with the formation of the Unit Trust of India by the Government of India and the Reserve bank of India (RBI) in 1923. Later, Securities and Exchange Board of India Act was enacted in 1992 with the aim of regulating the Indian securities market.

Earlier, people used to invest money in Fixed Deposits and other safe investment instruments. But, nowadays people are inclining more and more towards investing in mutual funds owing to its advantages over Fixed Deposits. A Fixed Deposit offers a pre-decided returns whereas Mutual Funds offer better returns on long-term investments as they are market-linked. Raju,

Manjunath and Nagaraja (2015) in the paper titled, "Performance Evaluation of Indian Equity Mutual Fund Schemes", observed that the returns in mutual funds are higher than other investments.

Fixed Deposits are not liquid as the invested amount is locked for a certain period of time, Mutual Funds possesses higher liquidity as they can be sold even in a short period of time.

An investor always prefers the risk to be minimum given a certain level of return. Risk is the measure of volatility that arises in a Mutual Fund's returns. According to the Modern Portfolio Theory, there are two components of risk associated with Mutual Funds- Systematic Risk and Unsystematic Risk.

Systematic Risk refers to the possibility that the entire market or economy will show losses that affect the investments adversely. The Modern Portfolio Theory does not claim that it can moderate this type of risk. Unsystematic Risk, also known as Specific Risk, is specific to individual stocks and can be reduced through diversification.

Harry Markowitz (1952) in his paper titled, “Portfolio Selection” said that we can create an optimal portfolio of our investments by diversifying our assets with the aim of minimizing our risk and achieving a certain level of return.

Immense work has been done on the Performance of Mutual Funds in order to help the investors choose the best one to invest in. Sathya Swaroop Debashish (2009) in the paper titled, “Performance Evaluation of Selected Growth-Oriented Mutual Funds” examined 23 public and private mutual fund schemes and determined the ones which performed excellently. Neeraja and Rao (2014) conducted a research on Comparative Performance Analysis of Select Indian Mutual Fund Schemes. However, not much work has been done on creating an Optimal Portfolio of Mutual Funds in the context of Indian market. Kilicman and

Sivalingam (2010) in their paper, “Portfolio Optimization of Equity Mutual Funds-A Malaysian Case Study”, developed a hybrid model for optimization of assets in equity mutual funds offered by three Malaysian Banks. This prompted me to work on the creation an optimal portfolio of mutual funds, by diversifying the fund’s assets as is given by the Modern Portfolio Theory (Markowitz 1952), from an Indian perspective.

DATA AND METHODOLOGY

The objective of this paper is to find an optimum portfolio of Hybrid Mutual Fund by dynamically allocating weights to the funds constituting the portfolio by using suitable NonLinear Optimization Technique so as to minimize risk subject to a specific return.

A hybrid fund combines equity stock component, a bond component and sometimes a money market component in a single portfolio. According to AMFI, hybrid funds invest in a mix of equities and debt, giving the investor the best of both worlds. These funds gain from a healthy dose of equities, but the debt portion fortifies them against any downturn. They are suitable for a medium-term horizon and are ideal for investors who are looking for a mixture of safety, income, and modest capital appreciation

The period of study is from April 2015 to March 2020. We have considered the monthly Net Asset Value (NAV) of the funds whose inception is before April 2015 and are still existing in the market. NAV represents the market value of the mutual fund. It is the price at which the investors buys and redeems the fund’s share. Unlike a stock price, it only changes at the end of any trading day, even though a mutual fund portfolio might include stock options which changes in real time. The monthly returns are calculated from the monthly NAVs by using the formula:

$$\text{Return} = \text{Logarithm} \left(\text{NAV}_t / \text{NAV}_{t-1} \right) ; t = 2 \text{ to } 60$$

For this study, a three - stage analysis has been conducted.

In the 1st stage, some funds are eliminated which have a Negative Average monthly Return and / or Negative Skewness of monthly return. The skewness coefficient is measured by the formula -

$$Sk = [(Q_3 - Q_2) - (Q_2 - Q_1)] / 2Q_2$$

Where, Q_3 = Third quartile

Q_2 = Second quartile or Median

Q_1 = First Quartile

Negatively Skewed means that the average return of most of the funds are less than Combined Average Return.

Then, we considered those funds whose Beta values are greater than the Average Beta value and Standard Deviation is less than the Combined Standard Deviation.

STANDARD DEVIATION

Standard Deviation measures the volatility of a fund's returns. It is the deviation of the returns from their average value. It is calculated using the formula:

$$SD = [\sum (x - \bar{x})^2 / n]^{1/2}$$

Assuming that the returns are normally distributed, we infer that 68% of the returns lie within plus or minus one standard deviation, 95% within plus or minus two standard deviation and 99% within plus or minus three standard deviations. It measures the total risk of an investor.

BETA

Beta is used to measure the systematic risk. In a simple linear regression analysis of returns of the fund and the market, it represents the coefficient of the market returns. It measures the changes in the fund relative to the overall market.

$$\beta = \text{Cov}(X, Y) / \text{Var}(X)$$

Where, X's are the market returns and Y's are the mutual fund's returns

In the second stage, we would allocate the weights of each of the selected funds by using suitable non- linear optimization technique.

Our objective is to minimize the variance of the weighted returns subject to a certain level of return.

We want to minimize-

$$\sum \text{Var}(w_i R_i) = \sum w_i^2 \text{Var}(R_i) + \sum \sum w_i w_j \text{Cov}(R_i R_j)$$

Where, R_i is the return of the i th fund and w_i is the weight of the i th fund, subject to constraints $w_i > 0$ for all i ,

$$\sum w_i = 1, \text{ and}$$

$$\sum w_i E(R_i) \geq \text{Combined average return.}$$

For this we use Generalized Reduced Gradient Method (GRG) to determine the weights.

GRG is a most widely used and efficient methods for portfolio optimization. Alrabadi, Dima. (2016) uses GRG nonlinear algorithm to a portfolio comprising of the 30 major stocks from the three different sectors in Amman Stock Exchange.

It is an algorithm to solve non-linear problems of general structure. Lasdon, in his book titled, “Nonlinear Optimization using Generalized Reduced Gradient Method” defines this method as-

Minimize $f(X)$,

subject to $g_i(X)=0$, $i=1, \dots, m$ and $l_i < X_i < u_i$, $i=1, \dots, n$

Where X is an n -vector and u_i and l_i are given upper and lower bounds. We assume $m < n$ since, in most cases, $m \geq n$ implies an infeasible problem or one with a unique solution. The fundamental idea of GRG is to use the equalities to express m of the variables, called basic variables, in terms of the remaining $n-m$ non basic variables. This is also the way the Simplex Method of linear programming operates.

Finally, we validate the result measuring the efficiency of the selected funds using Data Envelopment Analysis (DEA). DEA is a non-parametric mathematical programming model (linear) developed by Charnes, Cooper and Rhodes (1978) to measure the relative efficiency of decision-making units (DMUs) in using multiple inputs to produce multiple outputs where the production form is unknown.

Charnes, Cooper, Rhodes (1978) defined a model which had an input- orientation and assumed constant return to scale (CRS) known as a CCR model while Banker, Charnes and Cooper (1984) formulated a variable return to scale (VRS) approach and known as a BCC model.

The calculations for an input- oriented DEA for CRS and VRS model are given below.

CRS Model

Min θ

Subject to

$\sum x_{ij} \lambda_j \leq \theta x_{it}$, $i = 1, 2, \dots, m$ (input constraint)

$\sum y_{rj} \lambda_j \geq y_{rt}$, $r = 1, 2, \dots, s$ (output constraint) λ_j

≥ 0 for all $j = 1, 2, \dots, n$

VRS Model

Min θ

Subject to

$$\sum x_{ij} \lambda_j \leq \theta x_{it}, i = 1, 2, \dots, m \text{ (input constraint)}$$

$$\sum y_{rj} \lambda_j \geq y_{rt}, r = 1, 2, \dots, s \text{ (output constraint)}$$

$$\lambda_j \geq 0 \text{ and } \sum \lambda_j = 1; \text{ for all } j = 1, 2, \dots, n$$

If $\theta = 1$ or 100% for two or more DMU's, then super efficiency value needs to be calculated to discriminate them.

To perform DEA, the number of DMU to be equal to the greatest number of multiplications of input and output or three times of the summation of outputs and inputs (Raab and Lichty 2002).

In our study, we take mean and SD as the input variable and beta as the output variable.

ANALYSIS AND FINDINGS

There are altogether 222 mutual funds whose inception are before April 2015 and still exists in the market; out of which 72 funds are there with positive average and positive skewness of monthly returns.

The combined SD is calculated by the formula:

$$\text{combined SD} = (\sum n_i s_i^2 + \sum n_i (\bar{x}_i - \bar{x})^2 / \sum n_i)^{1/2}$$

where s_i^2 = variance of monthly returns of each fund, $\bar{x}_i$ = average monthly returns of each fund, $\bar{x}$ = combined average and n_i = number of monthly returns for each fund (here $n_i = 59$ for all i) and the average beta = sum of the beta values / n where n = number of funds.

Using the formula as stated above, combined SD = 0.0447 and average beta = 0.3502. There are 9 funds whose SD is less than the combined SD and beta is greater than the average beta.

Table 1: SD and Beta of Monthly Returns of the Selected Funds

Funds	SD	Beta
Edelweiss Arbitrage Fund - Regular Plan - Growth	0.041443	0.358539
L&T Arbitrage Opportunities Fund - Direct Plan - Growth	0.041426	0.358206
Mirae Asset Arbitrage Fund Direct Growth	0.039406	0.358634
Nippon India Balanced		
Advantage Fund-Dividend Plan	0.039391	0.358372
DSP Regular Savings Fund - Direct Plan - Growth	0.043211	0.353715
HDFC Multi Asset Fund - Growth Option - Direct Plan	0.043177	0.353369
Tata Balanced Advantage Fund Regular Plan-Growth	0.042749	0.351341
Nippon India Hybrid Bond Fund - Direct Plan Growth	0.044086	0.364267
BNP Paribas Conservative Hybrid Fund - Direct Plan - Growth	0.042706	0.350442

The variance -covariance matrix is then computed to minimize the risk.

Table 2: Variance Covariance Matrix

0.001688									
0.001688	0.001687								
0.001469	0.001468	0.001527							
0.001469	0.001468	0.001526	0.001525						
0.001638	0.001638	0.00148	0.00148	0.0018 36					
0.001637	0.001636	0.001479	0.001479	0.0018 34	0.001 833				
0.001631	0.001631	0.001455	0.001455	0.0017 73	0.001 772	0.00179 7			
0.001709	0.001709	0.001532	0.001531	0.0018 08	0.001 807	0.00178 4	0.0019 11		
0.001629	0.001629	0.001454	0.001454	0.0017 71	0.001 769	0.00179 5	0.0017 81	0.0017 93	

Next, the weights are calculated using GRG

Table 3: Weights of the Funds using GRG

Funds	Weight
Edelweiss Arbitrage Fund - Regular Plan - Growth	17%
L&T Arbitrage Opportunities Fund - Direct Plan - Growth	24%
Mirae Asset Arbitrage Fund Direct Growth	0
Nippon India Balanced Advantage Fund-Dividend Plan	0
DSP Regular Savings Fund - Direct Plan - Growth	0
HDFC Multi Asset Fund - Growth Option - Direct Plan	0
Tata Balanced Advantage FundRegular Plan-Growth	0
Nippon India Hybrid Bond Fund - Direct Plan Growth	21%
BNP Paribas Conservative Hybrid Fund - Direct Plan - Growth	38%

Thus we find that four funds, namely Edelweiss Arbitrage Fund - Regular Plan – Growth, L&T Arbitrage Opportunities Fund - Direct Plan – Growth, Nippon India Hybrid Bond Fund - Direct Plan Growth and BNP Paribas Conservative Hybrid Fund - Direct Plan – Growth constitutes the portfolio.

The optimum risk of the portfolio is 0.04% and the expected return on the portfolio is 0.84% .

The correlation matrix of the monthly returns of these four funds are given below.

Table 4: Correlation Matrix

	Edelweiss Arbitrage Fund - Regular Plan – Growth	L&T Arbitrage Opportunities Fund - Direct Plan – Growth	Nippon India Hybrid Bond Fund - Direct Plan Growth	BNP Paribas Conservative Hybrid Fund - Direct Plan – Growth
Edelweiss Arbitrage Fund Regular Plan – Growth	1	0.914968	0.915082	0.909439
L&T Arbitrage Opportunities Fund–Direct Plan–Growth		1	0.999998	0.853142
Nippon India Hybrid Bond Fund–Direct Plan Growth			1	0.85364
BNP Paribas Conservative Hybrid Fund–Direct Plan–Growth				1

The value of the determinant is $.0000071 \approx 0$, which implies that the portfolio is diversified, and thus unsystematic risk is eliminated.

Finally, we use DEA to measure the efficiency of the selected 9 funds.

The efficiency of each of these funds by CRS and VRS technique respectively are given in the following tables:

Table 5: Efficiency Scores by CRS Technique

Input Orientation, CRS	
DMU (Funds)	Efficiency
Edelweiss Arbitrage Fund - Regular Plan – Growth	0.99077633
L&T Arbitrage Opportunities Fund - Direct Plan – Growth	0.95052926
Mirae Asset Arbitrage Fund Direct Growth	0.99988723
Nippon India Balanced Advantage Fund-Dividend Plan	0.99998865
DSP Regular Savings Fund - Direct Plan – Growth	0.90515604
HDFC Multi Asset Fund - Growth Option - Direct Plan	0.90529996
Tata Balanced Advantage Fund-Regular Plan-Growth	0.91156487
Nippon India Hybrid Bond Fund - Direct Plan Growth	0.9897406
BNP Paribas Conservative Hybrid Fund - Direct Plan - Growth	1

Table 6: Efficiency Scores by VRS Technique

Input Orientation, n, VRS	
DMU (Funds)	Efficiency
Edelweiss Arbitrage Fund - Regular Plan – Growth	0.99084645
L&T Arbitrage Opportunities Fund - Direct Plan – Growth	0.95076032
Mirae Asset Arbitrage Fund Direct Growth	1
Nippon India Balanced Advantage Fund-Dividend Plan	1
DSP Regular Savings Fund - Direct Plan – Growth	0.91159454
HDFC Multi Asset Fund - Growth Option - Direct Plan	0.91222788
Tata Balanced Advantage Fund-Regular Plan-Growth	0.92140351
Nippon India Hybrid Bond Fund - Direct Plan Growth	0.99876537
BNP Paribas Conservative Hybrid Fund - Direct Plan - Growth	1

Thus, from the efficiency scores in both CRS and VRS technique, we see that the BNP Paribas Conservative Hybrid Fund - Direct Plan - Growth is the scale efficient fund, which has also got the highest weightage in the portfolio using GRG method.

CONCLUSION

Mutual Funds are a means of wealth creation. The Asset Management Companies manage these funds using professional expertise, which common individuals lack, in order to maintain a balance between returns and risks. Here, we see that four funds, namely Edelweiss Arbitrage Fund - Regular Plan – Growth, L&T Arbitrage Opportunities Fund - Direct Plan – Growth, Nippon India Hybrid Bond Fund - Direct Plan Growth and BNP Paribas Conservative Hybrid Fund - Direct Plan – Growth constitutes the portfolio. The optimal portfolio weight obtained by using GRG suggests investing the largest portfolio proportion in BNP Paribas Conservative Hybrid Fund - Direct Plan – Growth which is also the scale efficient fund as obtained from the DEA. Hence this study will help an investor to determine the proportion of diversifying his/her assets so as to minimize risk and obtain a specified level of Return.

REFERENCES

- [1] Alrabadi, D.W.H. (2016). Portfolio optimization using the generalized reduced gradient nonlinear algorithm. *International Journal of Islamic and Middle Eastern Finance and Management*.
- [2] Charnes, A., Cooper, W.W., & Rhodes, E. (1978). Measuring the efficiency of decision-making units. *European Journal of Operational Research*, 2(6), 429–444.

- [3] Cooper, W.W., Seiford, L.M., & Zhu, J. (Eds.). (2011). *Handbook on Data Envelopment Analysis* (Vol. 164). Springer Science & Business Media.
- [4] Debasish, S.S., & Shil, N.C. (2009). Performance Evaluation of Selected Growth Oriented Mutual Funds. *Adarsb Journal of Management Research*, 2(2), 1.
- [5] Kılıçman, A., & Sivalingam, J. (2010). Portfolio optimization of equity mutual funds— malaysian case study. *Advances in Fuzzy Systems*, 2010
- [6] Lanson, L.S., Fox, R.L., Ratner, M.W., (1974). *Nonlinear Optimization Using the Generalized Reduced Gradient Method*.
- [7] Markowitz, Harry. (1952). Portfolio Selection. *Journal of Finance* 7, no 1, 77–91.
- [8] Neeraja, M.K., & Rao, M.P.G. *Comparative Study on Mutual Funds*.
- [9] Raab, R.L., & Lichty, R.W. (2002). Identifying subareas that comprise a greater metropolitan area: The criterion of county relative efficiency. *Journal of Regional Science*, 42(3), 579–594.
- [10] Raju, D.J., BR, M.M., & GM, M.N. Performance Evaluation Of Indian Equity Mutual Fund Schemes. *Journal of Business Management & Social Sciences Research (JBM&SSR)*, ISSN, (2319–5614)..

04

Time-series Models: Forecasting Performance in the Stock Market

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Abstract: Contradicting evidence on time-series and financial analysts' forecasting performance calls for further research in financial markets. Motivation to use time-series models rather than analysts' forecasts stems from recent research that reports time-series predictions to be superior to analysts' forecasts in predicting earnings for longer periods and for small firms that are hardly followed by financial analysts. The paper aims to explore performance of time series models in forecasting earnings for six firms considering historical data of 11 years from January, 2010 to December, 2020. Monthly average stock data of last 11 years for five firms namely HCL, TCS, Infosys, Reliance, Tech Mahindra and Wipro was considered from NSE site. Every company had 132 values whose graphical plotting and stationarity check was performed. Data series for each of the five companies was found to be non-stationary. After differencing each of them, the series became stationary and graphical plotting was again done. Then best suited ARIMA Model for each stationary time series was determined upon comparison of goodness of fit statistics. After choosing the best suited ARIMA model, residuals were extracted and were found to be random with no external influence whatsoever. Hence forecasting was done based on chosen model for the monthly average stock price of these top six companies of India in 2020. The paper finds that premier ARIMA family models outperform naive time-series models in terms of mean percentage errors, AIC and average ranks. The findings suggest that investors use the selected ARIMA model to form their expectations.

Keywords: ARIMA, Time-series, Forecasting, Stock, Financial Market

INTRODUCTION

Financial Time Series Data (TSD) mining provides useful information for the investors, banks and insurance companies to channel their funds properly for better returns. This decision making is the primary motivation for prediction of financial TSD. Accurate multi-step ahead prediction of financial TSD becomes more difficult as the financial TSD is highly volatile. If prediction is onestep ahead preserving data trend is irrelevant. However, as the forecast horizon increases, preserving data trend becomes significant. In either case, prediction accuracy should remain high. Hence,

the two basic requirements for multi-step ahead prediction model are maintaining high prediction accuracy and preserving the data trend across the prediction horizon.

Traditional models cannot meet both the requirements simultaneously. However, a hybrid model may provide scope for preserving data trend across the forecast horizon while maintaining good prediction accuracy, which motivates the research work of this paper. Most of the traditional models such as ARIMA, GARCH and ANN are applied for one-step ahead forecasting in many works of the literature, where prediction accuracy is of major concern. However, in the present paper, we target multi-step ahead prediction, which requires preserving data trend in addition to high prediction accuracy. Such a model should account for the nature of TSD at every stage in the model.

The paper is organized in the following sections: First we present a literature survey of different prediction models existing in TSD. Next, we discuss the research methodology and the proposed ARIMA model is detailed in subsequent section. A quantitative analysis of the proposed model is discussed henceforth. The proposed and the traditional models are applied on selected NSE India data and the performance is compared. The paper ends with conclusion.

LITERATURE REVIEW

There are many kinds of research works in the area of forecasting using time series analysis. Some of the important tasks are mentioned here. A study deals with the implication of support vector machines (SVMs) regression, a novel neural network technique, in predicting the share price to examine the feasibility of SVM regression in predicting stock price. A data set related to Shanghai Stock Exchange in China has been used to test the validity of SVMs regression. The experiment depicts SVMs regression as a valuable method in forecasting the stock price

Bao *et al.*, (2004); Pinto *et al.*, (2020); Kumar *et al.*, (2020). Again, a study focused on forecasting the price of Infosys Technologies, taking into consideration the previous open, close, high, and low price using different neural classifier functions like Least Mean Square, Multilayer Perceptron, Pace Regression, Linear Regression, Gaussian Processes, Simple Linear Regression, Isotonic Regression, and SMO Regression Sureshkumar & Elango, (2011); Meher *et al.*, (2020). Besides, a study examines the relative predictive power of ARIMA, VAR, and ECM models in predicting inflation in Nigeria. In doing this, a domestic Consumer Price Index (CPI) was lumped into the headline (all-item). Annual data from 1970 to 2010 were used.

The study examines the performance of the forecasting ability of the models. It was observed that different models performed well in different periods. While ARIMA is

useful as a benchmark model, VAR for short-term forecasting and ECM are suitable for long-run forecasting (Uko & Nkoro, 2012; Bolar *et al.*, 2017). Furthermore, in a study, the authors reviewed some of the approaches, which could be used for a stock market forecast like Hidden Markov Model, Non- linear Regression Analysis, Naive Bayes Classifier, Artificial Neural Networks, Decision Trees Classifier, Support Vector Machines, Random Forest Method, PCA (Principal Component Analysis), WB-CNN (Word Embeddings Input and Convolutional Neural Network prediction model) and CNN (Convolutional Neural Network) and finally concluded that neural network showed better results compared to other methods (Sharma & Kaushik, 2018).

RESEARCH METHODOLOGY

Any time series analysis has the following major steps in methodology in Box Jenkins approach:

- a. Stationary check
- b. Performing Augmented Dickey Fuller (ADF) Test / Unit Root test. If p-value of the test is less than level of significance(α), we reject null hypothesis of presence of unit root which means series is stationary.
- c. Plotting the ACF and PACF of stationary series in order to determine the parameters of ARIMA model.
- d. Fitting all possible combinations of ARIMA model by changing the values of parameter p and q in ARIMA.
- e. Choosing the best ARIMA model with minimum value of AIC, since AIC is a measure of goodness of model fitting. Smaller the value of AIC, better is the fit.
- f. Carrying out “Residual Analysis” of the selected model. Ljung -Box test is performed in this regard, where if p- value greater than level of significance(α) we conclude that the model fits the TSD well.
- g. Forecasting is done based on the chosen ARIMA model for the subsequent years.

There are three important parameters in the ARIMA(p,d,q) model, which are the auto-regressive order p, the difference order d and the moving average q. In the front, after one difference to determine the smooth of the sequence, we can get d=1. Next, it is necessary to determine the value of parameter p and parameter q in order to determine the final model ARIMA (p, d, q). By analyzing the auto-correlation and partial correlation graphs of time series $\{Y_t\}$ the value of p and q can be determined.

RESULTS AND DISCUSSION

The original time series data of six companies (2010-2020) are shown below:

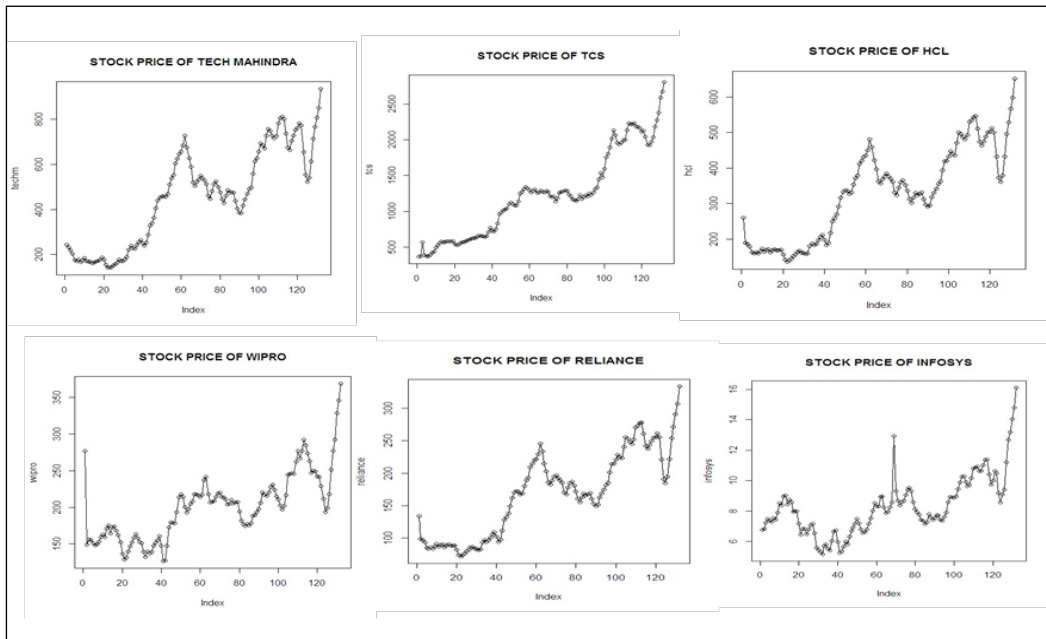


Fig. 1: Graphs of Stock Price of Six Companies (2010-2020)

It is clear from the above graphs that all the series are non-stationary. We difference each of the series appropriate number of times till stationarity is achieved. We carry out the Augmented Dickey Fuller / Unit root test on the differenced series to be certain that they are converted to stationary series.

UNIT ROOT TEST/ADF TEST

We want to test whether each of the series is stationary under this test. The null hypothesis is presence of unit root i.e. non- stationary.

Table 1: Unit Root Test

Company	Test Statistic Value	P-Value	Decision
TECHMAHINDRA	-3.733	0.02447	STATIONARY
TCS	4.0532	0.01	STATIONARY
HCL	-3.4255	0.04341	STATIONARY
WIPRO	-3.3564	0.01	STATIONARY
RELIANCE	-7.6845	0.01	STATIONARY
INFOSYS	-9.058	0.01	STATIONARY

As it can be seen from Table 1, the p-value corresponding to each series is less than level of significance (0.05) making accept the alternative hypothesis implying that all the differenced series are stationary.

We have also check the stationarity by ACF and PACF plots of each series.

MODEL FITTING

The cut offs (spikes) from the ACF and PACF function of the stationary series we can take various combinations of p and q to fit ARIMA (p,d,q). Here d is 1, as we difference each of the series once to make it stationary (for six companies HCL, TCS, Infosys, Reliance, Tech Mahindra and Wipro). We choose the best model looking at the value of Akaike's Information Criteria (AIC). Lesser the value of AIC, better is the fit. The following Table 2 gives the best fitted ARIMA model for each state along with the estimated parameters and some diagnostic measures.

Table 2: Best fitted ARIMA Model with Parameter Estimation and Diagnostic Values

Company	Best fitted ARIMA model	Estimated parameters along with its standard error (s.e)	AIC	Normalized BIC
Techmahindra	(1,1,1)	$\begin{array}{cc} \text{ar1} & \text{ma1} \\ \hline 0.2031 & 0.788 \\ \text{s.e.} 0.1100 & 0.0836 \end{array}$	1197.85	1206.47
TCS	(1,1,0)	$\begin{array}{cc} \text{ar1} & \text{ma1} \\ \hline 0.3000 & 18.8968 \\ \text{s.e.} 0.0843 & 6.8406 \end{array}$	1427.65	1436.27
HCL	(1,1,1)	$\begin{array}{ccc} \text{ar1} & \text{ma1} & \text{drift} \\ \hline 0.2201 & 0.8065 & 2.7505 \\ \text{s.e.} 0.1127 & 0.0736 & 2.9955 \end{array}$	1079.38	1090.88
WIPRO	(0,1,1)	$\begin{array}{c} \text{ma1} \\ \hline 0.6877 \\ \text{s.e.} 0.1500 \end{array}$	1075.83	1081.58
RELIANCE	(1,2,3)	$\begin{array}{cccc} \text{ar1} & \text{ma1} & \text{ma2} & \text{ma3} \\ \hline -0.4911 & -1.1138 & -0.7511 & 0.8787 \\ \text{s.e.} 0.1057 & 0.0615 & 0.1019 & 0.0592 \end{array}$	931.76	1030.61
INFOSYS	(1,2,3)	$\begin{array}{cccc} \text{ar1} & \text{ma1} & \text{ma2} & \text{ma3} \\ \hline -0.0617 & -2.8402 & 2.6887 & -0.8484 \\ \text{s.e.} 0.0946 & \text{Na} & \text{Na} & \text{Na} \end{array}$	310.39	870.23

DIAGNOSTIC CHECK

Ljung Box Test for Residuals

Here given at 5% level of significance, if p-value is less than 0.05 we reject H_0 implying that the SSE is large (or fit is not good) , otherwise we accept H_0 i.e. SSE is small or fit is good. In the following Table 4 we have given the value of Ljung-Box test statistic along with its corresponding p-value for each series for the chosen ARIMA model.

Table 3. Ljung-Box Test

Company	Ljung Box test statistic	P-value
TECHMAHINDRA	37.736	0.899
TCS	28.881	0.9928
HCL	40.931	0.8161
WIPRO	46.767	0.6039
RELIANCE	48.448	0.5358
INFOSYS	28.707	0.9933

We can see from Table 3, H_0 is accepted in all the cases which mean that the models we have chosen for each company stock is appropriate.

Residual ACF

As we know a primary measure of goodness of fit is that errors of the fitted models should be uncorrelated. This is a desired property that ensures that the model fitted is appropriate. If the spikes of residual ACF are on both sides of the horizontal axis in a random pattern and gradually decreases to zero, we may call it an ideal situation. Hence, eventually as the lag increases the spikes get within the control band. We can see from the residual ACFs plotted in Fig. 2 that all the ARIMA models fitted are proper.

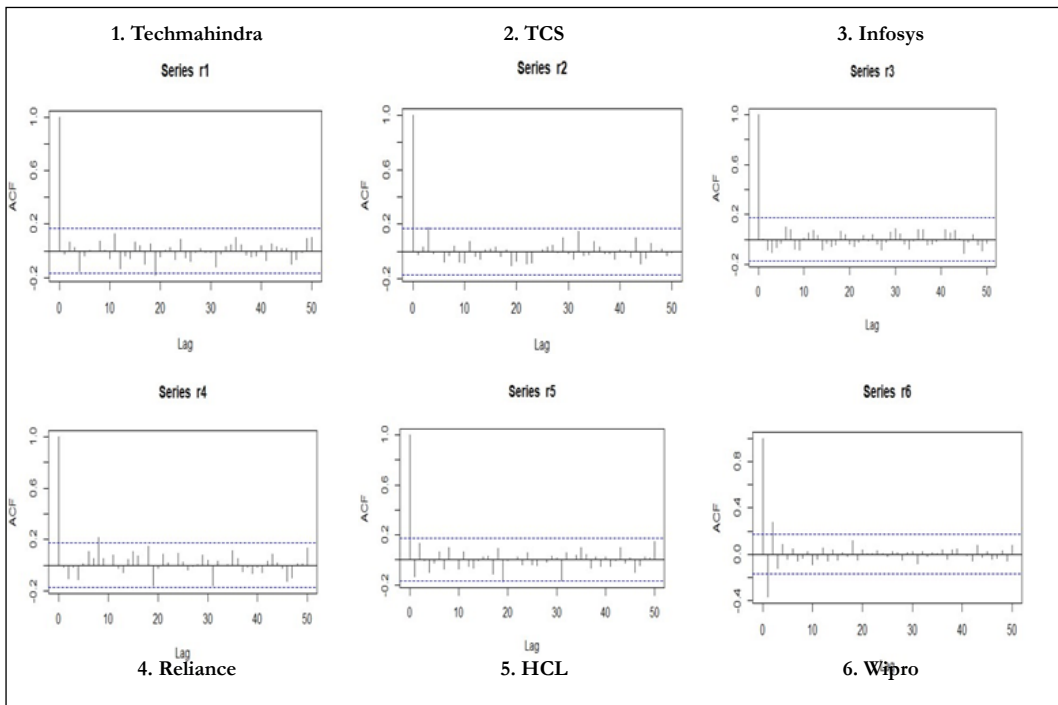


Fig. 2: Residual ACFs

FORECASTING

The forecasted values of monthly average stock data of 6 companies till September 2021 is given in Table 4 for the 6 companies' share price India along with their upper and lower control limits.

Table 4: Forecasts with Control Limits

Company		Jan, 2021	Feb, 2021	Mar, 2021	Apl, 2021	May, 2021	June, 2021	July, 2021	Aug, 2021	Sept, 2021
TECH-MAHINDRA	U	1070.03	1168.254	1240.597	1293.275	1336.740	1374.604	1408.597	1439.708	1468.566
	F	1006.712	1028.233	1040.146	1040.146	1040.146	1040.146	1040.146	1040.146	1040.146
	L	943.3928	888.2128	839.6950	787.0166	743.5514	705.6879	671.6950	640.5837	611.7258
TCS	U	3013.246	3142.083	3243.376	3329.296	3405.712	3475.693	3540.994	3602.703	3661.543
	F	2857.744	2887.036	2909.052	2928.884	2948.062	2967.043	2985.965	3004.869	3023.768
	L	2702.242	2631.989	2574.728	2528.473	2490.412	2458.393	2430.936	2407.036	2385.994
WIPRO	U	426.4442	465.5598	491.0237	511.4293	528.9557	544.5593	558.7610	571.8822	584.1374
	F	385.7729	385.7729	385.7729	385.7729	385.7729	385.7729	385.7729	385.7729	385.7729
	L	345.10165	305.986	280.5221	260.1165	242.5901	226.9866	212.7848	199.6636	187.4084
HCL	U	743.8218	809.1198	851.7427	884.3130	911.4847	935.2750	956.7053	976.367	994.6377
	F	701.7547	713.6428	716.4185	717.0665	717.2178	717.2531	717.2614	717.2633	717.2639
	L	659.6877	618.1638	581.0943	549.8200	522.9509	499.2313	477.8174	458.1597	439.8898
RELIANCE	U	95.224	82.12	90.32	94.123	99.892	101.143	97.435	98.98	102.34
	F	84.8374	64.7307	75.1777	70.6189	73.4298	72.6212	73.5903	73.6863	74.2111
	L	67.123	52.109	65.45	64.543	67.875	65.233	67.321	66.329	68.432
INFOSYS	U	8.345	8.432	8.123	8.56	8.43	8.234	8.321	8.567	8.543
	F	6.49458	6.844	6.17259	6.0206	6.11433	6.08737	6.11968	6.122877	6.14037
	L	5.567	5.654	5.321	5.432	5.764	5.321	5.234	5.321	5.354

U: UCL, F: Forecast, L: LCL

We plot the forecasted values company-wise from Jan 2021–Sept 2021.

CONCLUSION

Stock and financial markets tend to be unpredictable and even illogical due to the unevenness of market volatility. Because of such characteristics financial or market data should possess a rather turbulent structure which often makes it hard to find reliable patterns. Modeling such structures requires methods and algorithms capable of finding hidden pattern or trend within data and predict how they will affect them in the future. One of the most common and efficient methodology is ARIMA modeling of TSD. Autoregressive Integrated Moving Average (ARIMA) Model converts non-stationary data to stationary data before working and is one of the most popular models to predict nearly linear time series data. ARIMA model has been used extensively in the field of finance and economics as it is known to be robust, efficient and has a strong

potential for short-term share market prediction. In this work we have forecasted the share prices of 6 major companies of India in 2020 for the next 9 months and as we have already observed the prediction based on our chosen ARIMA model is fairly consistent. We see a significant rise in the share price of TCS in the near future, which calls for special mention. Another factor to pay attention is we do not go for a very long term prediction of such volatile data as several socio-economic factors are involved which play a major role in the rise and fall of market share prices. Though the companies that we have considered in this study i.e, Reliance, HCL , Tech Mahindra, Infosys, Wipro and TCS do show a steady forecast in the upcoming few years, based on their data till 2020, but investors should not discard the influence of other external factors before making their decision.

REFERENCES

- [1] G.E.P. Box, G. Jenkins, *Time Series Analysis, Forecasting and Control*, revised ed. 1976 Edition, Holden-Day, Incorporated, 1990.
- [2] G.L. Griepentrog, J.D. Cummins, Forecasting automobile insurance paid claims using econometric and ARIMA models, *Int. J. Forecast.* 1 (1985) 203–215.
- [3] R. Genesio, S. Pozzi, A. Vicino, U. Di Caprio, Short term load forecasting in electric power systems: a comparison of ARMA models and extended wiener filtering, *J. Forecast.* 2 (1983) 59–76.
- [4] R.E. Spudeck, Scott E. Hein, Forecasting the daily federal funds rate, *Int. J. Forecast.* 4 (1988) 581–591.
- [5] C. Babu, B. Reddy, Predictive data mining on average global temperature using variants of ARIMA models, in: *2012 International Conference on Advances in Engineering, Science and Management (ICAESM)*, 2012, pp. 256–260.
- [6] X. Wang, Y. Liu, ARIMA time series application to employment forecasting, in: *4th International Conference on Computer Science Education, 2009, ICCSE '09, 2009*, pp. 1124–1127. <http://dx.doi.org/10.1109/ICCSE.2009.5228480>.
- [7] R.F. Engle, Autoregressive conditional heteroscedasticity with estimates of the variance of the united kingdom inflation, *Econometrica* 50 (1982) 987–1008.
- [8] R.F. Engle, D.B. Nelson, T. Bollerslev, ARCH models, in: R.F. Engle, D.L. McFadden (Eds.), *Ch. Handbook of Econometrics*, vol. IV, 1994, pp. 2959–3038.
- [9] T. Bollerslev, R.Y. Chou, K.F. Kroner, Arch modeling in finance: a review of the theory and empirical evidence, *J. Econom.* 52 (1–2) (1992) 5–59.
- [10] L. Bianchi, J. Jarrett, R.C. Hanumara, Improving forecasting for telemarketing centers by {ARIMA} modeling with intervention, *Int. J. Forecast.* 14 (4) (1998) 497–504, [http://dx.doi.org/10.1016/S0169-2070\(98\)00037-5](http://dx.doi.org/10.1016/S0169-2070(98)00037-5).
- [11] H. Ghijssels, P.H. Franses, Additive outliers, GARCH and forecasting volatility, *Int. J. Forecast.* 15 (1999) 1–9.
- [12] R. Garcia, J. Contreras, M. van Akkeren, J. Garcia, A GARCH forecasting model to predict dayahead electricity prices, *IEEE Trans. Power Syst.* 20 (2) (2005) 867–874, <http://dx.doi.org/10.1109/TPWRS.2005.846044>.
- [13] E. Scott, Ken Johnston, GARCH models and the stochastic process underlying exchange rate price change, *J. Financ. Strateg. Decis.* 13 (2000) 13–24.

- [14] F. Yusof, I. Kane, Volatility modeling of rainfall time series, *Theoret. Appl. Climatol.* 113 (1–2) (2013) 247–258, <http://dx.doi.org/10.1007/s00704-012-0778-8>.
- [15] C.L. Hor, S. Watson, S. Majithia, Daily load forecasting and maximum demand estimation using ARIMA and GARCH, in: *International Conference on Probabilistic Methods Applied to Power Systems, 2006, PMAPS 2006*, 2006, pp. 1–6.
- [16] B. Zhou, D. He, Z. Sun, Traffic modeling and prediction using ARIMA/GARCH model, in: A. Nejat Ince, E. Topuz (Eds.), *Modeling and Simulation Tools for Emerging Telecommunication Networks*, Springer, US, 2006, pp. 101–121.
- [17] C.N. Babu, B.E. Reddy, A moving-average filter based hybrid ARIMA–ANN model for forecasting time series data, *Appl. Soft Comput.* 23 (0) (2014) 27–38, <http://dx.doi.org/10.1016/j.asoc.2014.05.028>.
- [18] M. O'Mahony, Tigran T. Tchrkian, Biswajit Basu, Real-time traffic flow forecasting using spectral analysis, *IEEE Trans. Intell. Transport. Syst.* 13 (2012) 519–526.
- [19] M. Huang, Y. He, H. Cen, Predictive analysis on electric-power supply and demand in China, *Renew. Energy* 32 (7) (2007) 1165–1174, <http://dx.doi.org/10.1016/j.renene.2006.04.005>.
- [20] P. Fryzlewicz, Lecture Notes: Financial Time Series, *ARCH and GARCH Models*, University of Bristol, 2007.
- [21] Robert F. Engle III, *Risk and Volatility: Econometric Models and Financial Practise*, New York University, 2003.
- [22] M.S. Heracleous, Volatility Modeling Using the Student-t Distribution, *Ph.D. Thesis*, Virginia Polytechnic Institute and State University, 2003.
- [23] J.J. Tseng, S.P. Li, Quantifying volatility clustering in financial time series, *Int. Rev. Financ. Anal.* 23 (0) (2012) 11–19, <http://dx.doi.org/10.1016/j.irfa.2011.06.017> (Complexity and Non-Linearities in Financial Markets: Perspectives from Econophysics).
- [24] J.S. Armstrong, *Principles of Forecasting: A Handbook for Researchers and Practitioners*, Kluwer Academic Publishers, MA, 2001.
- [25] B.P. Lathi, *Signal Processing and Linear Systems*, Oxford University Press, 2000.
- [26] T. Bollerslev, R.F. Engle, Common persistence in conditional variances, *Econometrica* 61 (1) (1993) 167–186.
- [27] Bao, Y., Lu, Y., & Zhang, J. (2004). Forecasting Stock Price by SVMs Regression Yukun. In *Lecture Notes in Artificial Intelligence* (Subseries of Lecture Notes in Computer Science) (pp. 295–303). https://doi.org/10.1007/978-3-540-30106-6_30
- [28] Sureshkumar, K.K., & Elango, N. M. (2011). An Efficient Approach to Forecast Indian Stock Market Price and their Performance Analysis. *International Journal of Computer Applications*, 34(5), 44–49. Retrieved from <https://www.semanticscholar.org/paper/An-Efficient-Approach-to-Forecast-Indian-Stock-and-Sureshkumar-Elango/5fe8b5c6126aa79fb58637b0d375fd4d4d4c6a6e>
- [29] Uko, A. K., & Nkoro, E. (2012). Inflation forecasts with ARIMA, vector autoregressive and error correction models in Nigeria. *European Journal of Economics, Finance and Administrative Sciences*, 50, 71. Retrieved from https://www.researchgate.net/publication/288453968_Inflation_forecasts_with_ARIMA_vector_autoregressive_and_error_correction_models_in_Nigeria
- [30] Sharma, S., & Kaushik, B. (2018). Review Article Quantitative Analysis of Stock Market Prediction for Accurate Investment Decisions in Future. *Journal of Artificial Intelligence*, 11(1), 48–54. <https://doi.org/10.3923/jai.2018.48.54>

A Study on the Consumer Behaviour at Fast-food Chain Amidst the Pandemic in South India

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Abstract: The study proposes various insights on the global branded fast-food chains operating in South India, focusing on the consumers. Rapid urbanisation growth, increasing affluence, and more participation of women in the workforce led to a consistent bloom in branded fast food culture in South India. Over the past couple of decades, there has been a complete transformation in lifestyles and demographics, leading to an ever-increasing demand for fast food restaurants. The study's primary purpose is to review the main concepts and identify the determinants that affect branded fast food consumer behaviour during the pandemic with particular reference to South India. Besides, the pandemic dramatically affects the global branded food industry, most specifically in South India, since the governments close down restaurants and fast food outlets to slow down the virus's spread. Closures of restaurants caused a ripple effect in the branded fast food production, alcohol and beer production, beverage, fishing, and farming. In India, restaurants' daily traffic dropped tremendously as compared to the same period in 2019. Hence in this context, the researcher collected the data on consumer behaviour on a branded fast food from various customers across South India. The sample size is two hundred, and the application software; namely, SPSS and Smart PLS3 were used for the analysis. Factor Analysis and Structured Equation Modelling were employed as a tool for analysing the data. The statistic results symbolised that three (food quality, outlet environment, and convenient location) were observed among the six explanatory variables to influence consumer satisfaction in the fast-food industry significantly.

Keywords: Consumer Behaviour, Customer Satisfaction, Fast Food, Factors, Marketing

INTRODUCTION

Customer behaviour towards a fast-food industry during this pandemic is essentially a common issue in any organisation. There has been a massive growth on the back of positive development with the huge investment in Indian fast food industry since India offers enormous opportunities for domestic and international players. As per the report, the global fast food market is expected to reach \$931.7 billion by 2027, escalating at a CAGR of 4.6% from 2020 to 2027. The global fast-food market is poised to witness robust growth during the forecast period, owing to rise in -number of fast-

food restaurants, number of working women, techsavvy ordering options, demand for international cuisines, and change in consumer taste and preference. Ironically, factors such as high setup cost of restaurants and rise in health concerns among the fast-food consumers are anticipated to jeopardise this market's growth. The increase in popularity of fast food restaurants, also known as the quick service restaurants (QSRs), boosts the global fast food market's growth. The emerging economies such as China, India, and Brazil dominate in terms of fast food consumption, owing to their large population base and scaled in the number of QSRs such as Wendy's, Subway, McDonald's, Burger King, and Dunkin' Donuts.

The service firms played a critical role in evaluating the service quality towards a customer's aiming to improve their marketing strategies. It is understood that a firm providing superior service quality has a tremendous satisfied customer base. Customer satisfaction is a major factor influencing repurchase intentions and behaviour because of the direct link with profits, ultimately providing an organisation's future revenue and earnings. Therefore, to attract more customer's various companies are urged to assess and improve their service quality. Some academic studies address customer satisfaction with that of service quality in the fast-food industry. Unfortunately, most of the reviews are limited to their mere relationship between customer satisfaction and service quality. Whilst few potential determinants of customer satisfaction such as food quality and perceived value were ignored as well. It is essential to understand the interplay between the customer behavioural intentions and recovery mechanism. Better recoveries increase the customer's propensity to return to the same service provider. While weak service recovery probably strengthens the customer's dissatisfaction with the service.

FAST FOOD INDUSTRY: ITS ORIGIN AND GROWTH

It is believed that the fast-food industry originated in the 1800s. Thomas Jefferson was acknowledged as the first person who brought the French recipe for "*pommes frites*" (French Fries) in the US in 1802. Ironically, French fries and hamburger had not been popular until the 1920s. It is believed that hamburger originates from Russian recipe—however, later German sailors anchoring Baltic ports brought to Hamburg, Germany.

In the early 1900s, when fast food industry was newly introduced simple snacks (foods and drinks) could be accessed or generated by inserting the right coins of a fixed amount for the items through an automatic vending machine. This innovative vending machine was purposefully invented by the business community to dramatically change the people's manner of taking their foods with a famous slogan called "less work for mothers". This machine was quickly adapted and undertaken by the customers in public commuters, cars and trains because of its conveniences. Since World War II broke out, there has been a massive workforce or rapid increase in women's participation in the fast-food industry for efficient food preparation. Ultimately, fast food came into being because of the essential need to "eat on the run".

Henceforth, the White Castle was the first fast among the United States' food chain producing hamburgers in 1921. Fortunately, the fast-food formula was exceedingly successful in such a manner that it attracted many giant food chains such as McDonald's (1940), Burger King and TV Dinner (1950), Kentucky Fried Chicken (KFC, 1962), Taco Bell (1962), Wendy's (1972) as a part of the fast-food industry. As per the statistic is concerned since the early 1990s the fast food industry has been remarkably growing in a country like Bangladesh, India, Sri Lanka, etc. although the total number of fast-food restaurants in those could not be ascertained. Today, thousands of restaurants in Bangladesh, India, Sri Lanka are now serving millions of people in urban areas.

THEORETICAL FOUNDATION

In fast-food management literature, the essence of service quality is considerably addressed where the superior service leads to satisfaction and a loyal customer who frequently shows patronage is vital for the success of FFRs (Fast Food Restaurant). On the contrary, a poor service quality leads to customer dissatisfaction, and there is a high chance that customers dine at a competitor's FFR (Fast Food Restaurant) and become an active champion in persuading others to go elsewhere. Ultimately, service managers need to acknowledge and conceive how customers perceive the service they are being provided and what factors would determine the nature of the perceived service quality in FFRs (Fast Food Restaurant).

Basically, consumer behaviour is contingent on certain factors which determine individually or collectively the absolute decision-making process of consumers. Consumers behave rationally as per the theory of consumer behaviour with the perfect information about the market. This brings to a point where consumers are well aware of their needs and demands. Therefore they should know how to satisfy them in the best possible way. The theory considers that consumers' decisions follow a rational process by which they could obtain optimum value for their money spent on buying goods and services. Nevertheless, consumer demand depends on three principal factors: consumer's income, prices of the goods and willingness to pay.

STATEMENT OF THE PROBLEM

In today scenario, consuming fast food has become a part of a modern lifestyle for many people who are busy with their activities. Those varieties of fast food are well known as junk food because they are easy to make and consume, zero in nutrition value, have only high fat to cause an illness, and high sugar levels. They are thereby increasing the risk of joint disease or severe health problem such as high cholesterol level to have a heart attack, overweight or obesity, diabetic and liver illness. This study researcher would examine how the demographic factor (such as age, gender, occupation) and two variable factors (Independent & Independent) motivate and find interdependence between the factors affecting consumer decision to consume fast

food. What measures have the fast-food industry taken to adapt to multi-international culture during the pandemic? What are the similarities and dissimilarities in their cultural adaptation patterns during the pandemic?

Significance of the Study is to investigate the consumer behaviour in consuming fast food which can help marketers in forecasting and develop proper marketing strategies for the fastfood industries in South India. Scope of the study was limited to six explanatory variables. They are namely, independent variables, food variety, outlet environment, food quality, service quality, food price and convenient location, and dependent variable. The geographical area includes the entire South Indian states.

The following hypotheses were formulated as part of the study. H1: The convenient location of the fast-food outlets should positively influence consumer satisfaction. H2: The price of fast foods should negatively impact consumer satisfaction. H3: The quality of fast food should positively influence consumer satisfaction. H4: The varieties of foods positively influence the satisfaction of fast-food consumers. H5: The atmosphere of the fast-food outlets should positively influence consumer satisfaction. H6: The service provided by the fast-food outlets to the consumers should positively influence consumer satisfaction.

METHOD

Research Question in the researcher's mind was as follows; How do consumers of Branded fast-food perceive an international brand such as Burger King, KFC, Mc Donald, etc. during the pandemic. What measures have the fast-food industry taken to adapt to multiinternational culture during the pandemic? What are the similarities and dissimilarities in their cultural adaptation patterns during the pandemic?

Finally, the objectives were decided to identify the determinants that affect consumer satisfaction in a Branded Fast Food amidst the pandemic in South India and to study the customers' awareness and opinion about the service towards a Branded Fast Food amidst the pandemic in South India.

AN OPERATIONAL DEFINITION OF VARIABLES

Table 1: Operational Definition of Variables

Food quality	Food quality is defined as the total of all foods' characteristics, that bear an ability to satisfy stated or implied preferences. In general, Quality refers to the variety and a multidimensional concept, most of which are subjective. <i>—Allan Buckwell 2012.</i>
Service quality	'Service quality is defined as the focused assessment, which reflects the customer's mind-set of specific dimensions of service including reliability, responsiveness, assurance, empathy, tangibles.' <i>—Zeithaml and Bitner 2003:85</i>
Food variety	Food variety is defined as the consumption of a mixture of foods from the whole range of food domain (such as, vegetables, fruit, cereals, meat, fish and dairy products). The word variety literally symbolised a range of foods from each food group should be consumed. <i>—Walker, J. and Fisher, G. 1997</i>

Table 1 (Contd.)...

Outlet environment	An outlet environment refers to a store, shop or other commercial establishment selling goods relating to fast foods product directly to the public, often from a single manufacturer or producer. — <i>Collins Dictionary</i>
Food price	Food Price is the prices incurred by the customers in exchanged with the good or service for consumption. — <i>Banes, et al, 2011, pg. 331.</i>
Convenient location	By Convenient location we meant that a business is conveniently located at the suitable places to attract customers ascertained the growth and increased the sales and brand visibility. — <i>Thomas Oppong Mar 15, 2018</i>
Consumer satisfaction	Consumer satisfaction is defined as the measurement of satisfactory level of all items including food, service and facilities of a branded fast food outlet. — <i>George, 2004; De Vellis, 2003</i>

RESEARCH MODEL

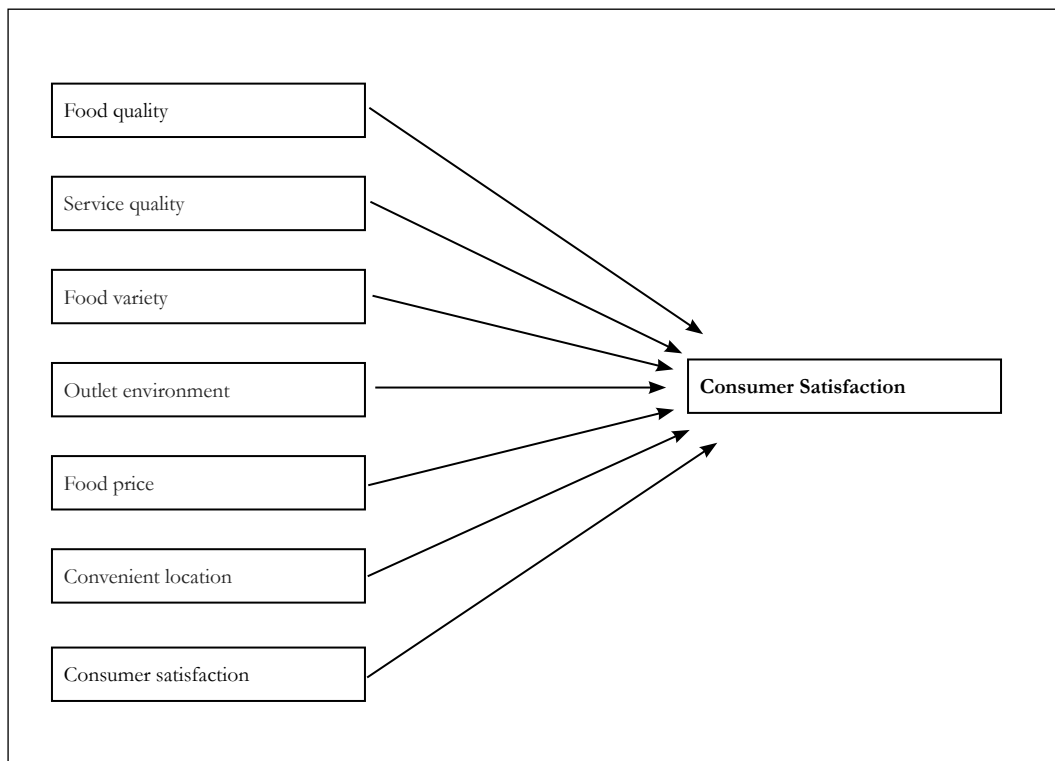


Fig. 1: Research Model

RESEARCH DESIGN/RESEARCH METHODOLOGY

The research design was a descriptive research design, and the population for the study was an adult (customers) from across South India, and the sample was 200 samples (Min). The sampling technique used was convenience sampling, and data collection tool was a Structured Questionnaire using a Google sheet. Data Analysis was carried out with the help of Structured Equation Modelling.

ANALYSIS AND DISCUSSION

The analysis and interpretation of 200 respondents as sample size collected on an unbiased basis of the people from a various customer based in South India (Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Telangana as well as the union territories of Lakshadweep and Puducherry). In the study, we used descriptive research design. The researcher used a sequential procedure, and the data was collected using the query template available in the data contained in the google sheets. The normal relationships between the variables were tested and measured using the Standard Deviation Method (SEM). The validity and reliability of scale dimensions were used to analyse and measure the analytical models were identified using the Smart PLS 3 package.

Sample Profiling was the total samples collected from the 200 respondents include demographic variables such as Gender, the Age and Profession. The demographic profile of the respondent is as shown in the Table and Diagram below:

Table 2: Demographics Profile

Variable	Category	Frequency	Percentage
Gender	Female	102	51
	Male	98	49
	Prefer not to say	0	0
Age	Below 20	33	16.5
	20-25	92	46
	25-30	47	23.5
	Above 30	28	14
Profession	Students	103	51.5
	Employed	45	22.5
	Self-Employed	41	20.5
	Others	11	5.5

From the table given above, among the total respondents when it comes to gender, 102 respondents are female, and 98 respondents are male, respectively. Among the total respondents when it comes to age group, 92 respondents are between 20-25, 47 respondents between 25-30, 33 respondents below 20, and 27 respondents above 30. When it comes to the various professions of the total respondents, 103 respondents are students, 45 respondents are employed, 41 are self-employed, and 11 respondents belong to others category.

TESTING THE RELIABILITY AND VALIDITY

A structured questionnaire was used to capture the information from the respondents. The questionnaire has two parts: In the first part, we captured demographic data of the respondents. The second part consists of sixteen (16) questions that have helped analyse seven major factors: the quality of foods, quality of service, food price, food

variety, outlet environment, convenient location, and consumer satisfaction. The questions used Likert scale measurement in which 5- strongly agree, 4-agree, 3-neutral, 2-disagree, and 1- strongly disagree.

Table 3: Reliability and Validity

Variable	Cronbach's Alpha	No. of Items
Consumer Satisfaction	0.79	3
Environment	0.67	3
Food Price	0.75	2
Food Quality	0.76	2
Food Variety	0.81	2
Location Convenience	0.68	2
Service Quality	0.79	2

Source: Computed Data

The reliability coefficient is a measure of the data's internal consistency, which recommends a value greater than 0.6. The reliability has been checked for the questionnaire using Cronbach's Alpha. The reliability of each independent variable was calculated, demonstrating that outlet environment, food price, food quality, food variety, convenient location and service quality have a reliability value of 0.67, 0.75, 0.76, 0.81, 0.68 and 0.79 respectively, which means that the reliability of the entire questionnaire for the dependent variable is reliable.

The Dependent variable has also been calculated where Consumer Satisfaction has a reliability value of 0.79 which means the variables are having proper reliability. Hence, the data is reliable, the alpha is good, and the data set is consistent for further study.

SEM ANALYSIS

The structured equation model is used to identify the determinants that influence consumer behaviour and the satisfaction level and examine customers' consumption pattern. The use of path coefficient and finding the p-value constitute a significant method in hypothesis testing. Besides, Cronbach alpha, composite reliability and correlation are used. The model fit and quality indices are also mentioned in below the table. They have been used as an evaluation and a structuring tool. The software we used is Smart PLS 3 which can be used to evaluate the relationship between the dependent and independent variables. The result which we analysed through the process is formed as table below and relevant data to prove our hypothesis are also entered.

Table 4: The Measurement Model Analysis

Variable	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Consumer Satisfaction	0.79	0.543	0.765	0.520
Environment	0.67	0.544	0.763	0.518
Food Price	0.75	0.567	0.807	0.678
Food Quality	0.76	0.359	0.728	0.581
Food Variety	0.81	0.522	0.802	0.670
Location Convenience	0.68	0.388	0.764	0.618
Service Quality	0.79	0.326	0.736	0.586

Source: Computed data

Reliability of internal consistency, the convergence of validity, and the value of discrimination were analysed. For internal consistency reliability, Cronbach's Alpha and Composite Reliability (CR) values were calculated. Mean-variance values explained by the number of factors (AVE = Average variance extracted) were used to analyse convergent validity. Alpha and composite reliability values (Cronbach) values are used to measure the consistency of items in the scale, while the average variance extracted (AVE) value is used to see the measurement of the convergence between specific items that represent the latent structure.

According to (Joseph F. Hair Jr., 2014), the load should be greater than 0.50 in Cronbach's Alpha and Reliability Test (CR) should be higher than 0.60, and the Average Variance Extract (AVE) must be higher than 0.50. The table below shows the metrics used for the analysis of data in the sample.

Table 5: Correlations Among l.vs. with sq. rts. of AVEs

Latent Variable Correlations

Variable	Consumer Satisfaction	Environment	Food Price	Food Quality
Consumer Satisfaction	1.000	0.515	0.354	0.493
Environment	0.515	1.000	0.434	0.398
Food Price	0.354	0.434	1.000	0.254
Food Quality	0.493	0.398	0.254	1.000
Food Variety	0.361	0.523	0.358	0.410
Location Convenience	0.504	0.497	0.358	0.414
Service Quality	0.269	0.411	0.208	0.259

Source: Computed Data

The estimated model with path coefficient and corresponding p-values are provided below

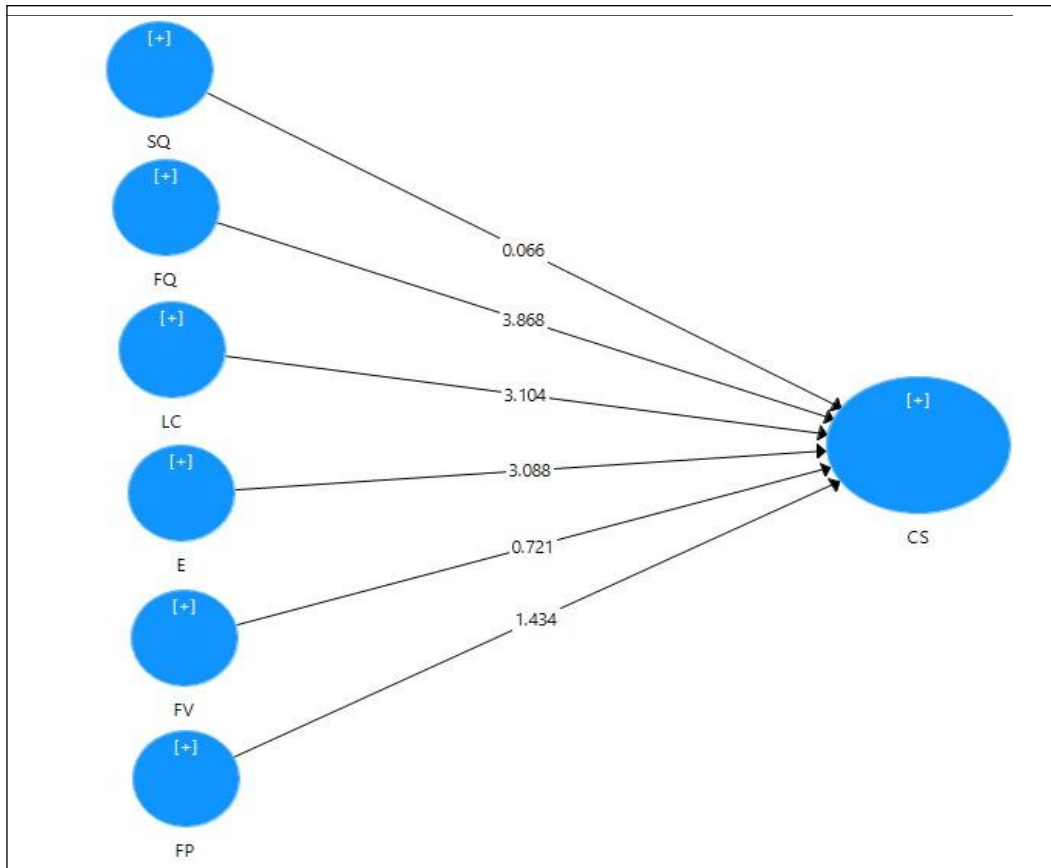


Fig. 2: The Estimated Model with Path Coefficient and Corresponding p-values

To assess the model fit with the data, the six fit criteria were measured. And found that values are based on the limits. Therefore, the model has acceptable, predictive, and explanatory quality as the model well represents the data.

Table 6: Model Fit and Quality Indices

	Saturated Model	Estimated Model
SRMR	0.105	0.105
d_ULS	1.488	1.488
d_G	0.503	0.503
Chi-Square	613.817	613.817
NFI	0.180	0.180

Source: Computed Data

Table 7: Hypothesis Testing Results

Variable	Path Coefficient	P Value	Hypothesis Testing Results
Convenient location > Consumer satisfaction	3.104	< 0.001	Accepted
Food price > Consumer satisfaction	1.434	0.184	Rejected
Food quality > Consumer satisfaction	3.868	< 0.001	Accepted
Food variety > Consumer satisfaction	0.721	0.599	Rejected
Outlet environment > Consumer satisfaction	3.088	< 0.001	Accepted
Service quality > Consumer satisfaction	0.066	0.919	Rejected

Source: Computed Data

HYPOTHESIS TESTING RESULTS

Hypothesis testing is done using significant level testing in each path of influence between dependent and independent variables. Several past scholars and researchers have also studied consumer behaviour in branded fast food and identify the factors that influence the consumer's satisfaction. In this study hypothesised testing is explained with six different factors and how these factors played an essential role in influencing consumer satisfaction in branded fast food.

The hypotheses are as follows:

H1: The convenient location of the fast-food outlets should positively influence consumer satisfaction.

The first component is the location where the Cronbach's $\alpha = 0.68$. Based on the analysis, our results say the p-value is .001, which means the place's convenience has a positive relationship with consumer satisfaction. We consider if the p-value is < 0.001 , the relationship is significant, and the path coefficient value between the convenience of the location and consumer satisfaction is 3.104. Therefore, convenient place and good communication are identified to play an important role in this hypothesis.

Hence H1 is accepting the hypothesis at a 1% significance level.

H2: The prices of fast foods should negatively influence consumer satisfaction.

The second component explained prices where Cronbach's $\alpha = 0.75$. Based on the analysis, our results say the p-value is .184, which means prices of fast foods do not positively correlate with consumer satisfaction. If the p-value is < 0.001 , the relationship is significant, but it's not the same in these cases. The path coefficient value between prices of fast foods and consumer satisfaction is 1.434. There is three items viz, cheap,

reasonable and special price variables which are identified as an important factor in influencing consumer satisfaction.

Hence H2 is rejecting the hypothesis.

H3: The quality of fast food should positively influence consumer satisfaction.

The third component is the quality of fast food where the Cronbach's $\alpha = 0.76$. Based on the analysis, our results say the p-value is .001, which means the quality of fast food has a positive relationship with consumer satisfaction. We consider if the p-value is <0.001 , the relationship is significant, and the path coefficient value between the quality of fast food and consumer satisfaction is 3.868. The items show values greater than .60, which are nutritious food and the food causing no health issues.

Hence H3 is accepting the hypothesis at a 1% significance level.

H4: The varieties of foods positively influence the satisfaction of the fast-food consumers.

The fourth component is varieties of foods where the Cronbach's $\alpha = 0.81$. Based on the analysis, our results say the p-value is .184, which means varieties of foods do not positively correlate with consumer satisfaction. We consider if the p-value is <0.001 , the relationship is significant, but it's not the same in these cases. The path coefficient value between varieties of foods and consumer satisfaction is 0.721. This particular hypothesis has significant factors on the components such as tasty food and the availability of a wide variety of food. This variety of items identified as the promotional price of branded fast food marketing offers an occasional deal and family package.

Hence H4 is rejecting the hypothesis.

H5: The atmosphere of the fast-food outlets should positively influence consumer satisfaction.

The fifth component is an atmosphere of fast food where the Cronbach's $\alpha = 0.67$. Based on the analysis, our results say the p-value is .001, which means the quality of fast food has a positive relationship with consumer satisfaction. We consider if the p-value is <0.001 , the relationship is significant, and the path coefficient value between the atmosphere of fast food and consumer satisfaction is 3.868. These components comprise three essential items considered for satisfaction such as interior design, decoration, and good control.

Hence H5 is accepting the hypothesis at a 1% significance level.

H6: The service provided by the fast-food outlets to the consumers should positively influence consumer satisfaction.

The sixth component is varieties of foods where the Cronbach's $\alpha = 0.79$. Based on the analysis, our results say the p-value is .184, which means varieties of foods do not positively correlate with consumer satisfaction. We consider if the p-value

is <0.001 , the relationship is significant but it's not the same in these cases. The path coefficient value between varieties of foods and consumer satisfaction is 0.066. The sixth component determined the importance of the service offer for a branded fast food industry viz, friendly salesperson, and prompt service to be considered for consumer satisfaction.

Hence H6 is rejecting the hypothesis.

MAJOR FINDINGS AND MANAGERIAL IMPLICATION

In *Figure 4.1: The Estimated model with corresponding p-values* indicates the path of significant and vice-versa. Apparently, in the Research model, three of the factors significantly influenced consumer satisfaction and determined the acceptability of the hypotheses, while the remaining three do not considerably influence consumer satisfaction. The path coefficients and corresponding p-value provided in Table 4.6: Hypothesis testing results show that three of the hypothesis viz, **H1**, **H3** and **H5** were accepted and positively influence consumer satisfaction while the other three hypotheses viz, **H2**, **H4** and **H6** were rejected and hence negatively influence consumer satisfaction in a branded fast food. Basically, the quality of foods, outlet environment and convenient location are certain factors that would lead to the enhancement of branded fast food industry and increase consumer satisfaction in fast food marketing. The estimated model symbolised that prices of food show less significant among the consumers in South India. This indicates that consumers were not concerned about the amount because they have adequate income to meet the branded fast food expenditures. This outcome represents the positive socioeconomic trend of the South Indian where per capita income crosses \$1000 as compared to the previous decade. Besides, food variety and service quality less significant as well where the consumer in the region of South India was not much concerned about the menu available and the culture of service offering.

Those varieties of branded fast food popularly called junk food are technically zero in nutrition value, have only high fat that would cause an illness and high level of sugar thereby increase the hazardous common disease or serious health problem including overweight or obesity, diabetic and high cholesterol level that would affect the health of heart and liver. Even though the consumers were cautious but still keep up the momentum of consuming the products. Ultimately, the big questions to be pondered are: - Why people want to finish the branded fast food? What are the main factors that motivate them to consume branded fast food products?

The COVID-19 pandemic had a massive impact on the global branded food industry since the governments close down restaurants and fast food outlets to stop the virus's spread. The country restaurants' daily traffic dropped dramatically as to 2019. Closures of restaurants caused a ripple effect on the particular fast food industry and related

industries such as food production, liquor production, shipping, fishing, and farming. Ultimately, the branded fast food industry should consider these following matter amidst the pandemic: Proactively communicating changes which are crucial in helping consumer plan and prepare in Social Media (Google is one such platform for updating Business profile) Reassure strict restaurant safety and sanitation measures (for instance Mc Donald, Domino's & KFC delivery services). All the fast-food chains should have launched Zero-Contact Deliveries.

CONCLUSION

Dramatically, the branded fast food industry is booming in South India, where most of the fast-food chain companies are operating in metropolitan cities like Bangalore, Hyderabad, Kochi, Chennai, etc. The per capita national income of South India determines consumer to consume fast food in the most expensive outlets like KFC, McDonald. Pizza Hut, Burger King. Fast-food chains have perfected delivery service and convenience formats all across Southern states and India as a whole. They are available on food aggregator platforms besides having their app and are focusing on the value they offer to the customers. Hence, the study intends explicitly to determine the consumer satisfaction through several independent factors viz, quality of food, quality of service, variety of food, the environment of the outlets, price of food and location convenience. The results show that three factors have significantly impacted consumer satisfaction while the other three does not significantly impacted consumer satisfaction. As per my suggestion is concerned there should be research carried out on customer behaviour of branded fast food in the near future specifically in South India to identified the changes and transitions in the lifestyle, dietary habits of the people and an increasing number of people across different groups specifically adolescents and young adults. This might help ensure food quality, outlet environment, and convenient location to satisfy customers' needs adequately. Therefore, International branded fast food should have developed the latest advanced techniques to be implemented in a rapidly growing South Indian QSR industry.

Ultimately, it is essential for the fast-food industry to effectively consider certain positive factors for enhancing consumer satisfaction in South India.

REFERENCES

- [1] Agnes K.Y. Law, Y.V. Hui, Xiande Zhao, (2004). "Modelling repurchase frequency and customer satisfaction for fast food outlets", International Journal of Quality and Reliability Management, Vol: 21, Iss: 5, pp: 545 – 563
- [2] Baines, P., Fill, C. and Page Kelly. (2011). "Marketing" 2nd edn.US: Oxford university press.
- [3] DeVellis, R.F. (2003). Scale Development: Theory and Applications, 2nd ed., Thousand Oaks, CA: Sage Publications.

- [4] Harsh V Verma. (2012), Service Marketing; Text and Cases, 2nd edition, Pearson Education India, 2012, p. 277. Buying behaviour.
- [5] Kotler, Armstrong, Ang, Leong, Tan, Yau (2009) Principles of Marketing A Global Perspective, First Lok Yang Road, Jurong Singapore, Pearson Prentice Hall.
- [6] Kuester, Sabine (2012): MKT 301: Strategic Marketing & Marketing in Specific Industry Contexts, University of Mannheim, p. 110.
- [7] Monika J.A. Schroder, Morven G. McEachern, (2005) “Fast foods and ethical consumer value: a focus on McDonald’s and KFC”, British Food Journal, Vol: 107, Iss: 4, pp: 212–224.
- [8] Paul Peter & Jerry C. Olson (2005), Consumer Behaviours & Marketing Strategy 7th edition, p. 5 McGraw-Hill.
- [9] Philip Kotler & Gary Armstrong (2008), Principles of Marketing, 12th edition, Upper Saddle River, Pearson Prentice Hall.
- [10] Rajul Bhardwaj (2011), “Perception about the Attributes of Selected Fast Food Retailers and their Impact on Consumer Satisfaction and Sales”, Management Convergence, Vol: 1, No: 2.
- [11] Schiff man, L.G. & Kanuk, L.L. (2007), Consumer Behaviour, 9th edition, Upper Saddle River, N.J.: Pearson Prentice Hall.
- [12] A Study on Customer Awareness and Satisfaction Towards Kentucky Fried Chicken (KFC) in Coimbatore.https://www.worldwidejournals.com/global-journal-forresearchanalysisGJRA/recent_issues_pdf/2013/January/January_2013_1358500671_37069_52.pdf.
- [13] An Analytical Study of Customer Satisfaction towards KFC Restaurant chain in Udaipur city..

06

Analysis of Consumer Online Buying Behaviour for Home Appliances in New Normal Era

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Abstract: The unanticipated worldwide eruption of coronavirus (COVID- 19) is the prime human tragedy that has affected the lives of millions of people thereby shattering the global economy as a whole. Each and every sphere of the global market has been affected causing a long term impact due to this pandemic situation irrespective of its nature of operation. But in spite of all these adversities the one and only sector that showed the silver lining is the virtual mode of shopping. There has been a revolution in the field of online communication and enormous e-commerce usage by traders which has resulted a mammoth growth of online shopping in the recent years. Online shopping environment provides access to a plethora of information from any place at any time about products and services, customer reviews, variety of products and all these by spending less time compared to visiting retail stores. In this backdrop the researchers have performed a Regression Analysis on primary data. They have made an attempt to develop a score of the customers regarding purchase of home appliances through internet in and around Kolkata based on five demographic attributes namely- monthly income, location, occupation, pre pandemic online purchase behaviour, and education. The paper also focuses to optimise the parameters of the proposed Regression Model and test the efficiency of the constructed model and compare the result by reviewing the existing literatures on the related topic.

Keywords: COVID-19, Online Shopping, E-commerce, Technology, Home Appliances, Consumer Behaviour, Regression Analysis.

INTRODUCTION

The sudden outbreak of COVID-19 has taught the world citizens to think dynamically. It is observed by Debnath (2020), during this pandemic period high price rise of the products and delayed online service has highly influenced the consumer purchase behaviour. Though the fetish for online shopping is growing at an exponential rate since the internet revolution during the last two decades as per Saha (2015). According to Lahiri and Ghosh Sarkar (2018) the consumer's behaviour towards the purchase

of Home Appliances has undergone through a sea change to keep pace with the growing trend. In this phase of transformation, various companies have started using the Internet with the aim of cutting down marketing costs, thereby curtailing the price of their products and services in order to have an edge in this highly competitive market as observed by Gupta and Jain (2017). Recently, the online vendors use Internet to transmit, communicate and diffuse information, to sell their products, to take feedback and also to manage satisfactory surveys with customers. Kinker and Shukla (2016) observed that the customers use Internet not only to conduct online purchase of their desired products, but also to differentiate prices of the available options, product features and post sales service facilities they would receive if they purchase the product from a particular store. Since, this is a beneficial situation for both the ends that is the sellers and the buyers, so many experts are buoyant about the possibility of online marketing. According to a recent survey, India is expected to have the fastest growth in retail e-commerce from 2018-2022 and by 2040, 95% of all purchases are predicted to be via ecommerce.

This global revolution of online marketing is also reflected in case of online purchase of Home Appliances. Lahiri and Ghosh Sarkar (2018) stated that Home Appliances are actually the electrical or mechanical acoustics which are mainly used to perform various household functions like cooling, cooking, heating or cleaning. Home Appliances are predominantly classified into Major Appliances (White Goods), Small Appliances and Consumer Electronics (Brown Goods).

In India also, the internet and mobile perforation has created a huge effect over the last two decades in the field of e-commerce.

This paper mainly highlights to develop a score or rating of the customers who are more likely to purchase home appliances through internet and vice versa through Regression Analysis based on five demographic profiles namely- monthly income, location, occupation, pre COVID-19 online purchase, and education. To conduct the research work, the famous metropolitan city of India- Kolkata and outskirts is chosen. Kolkata being a metropolitan city with numerous uninterrupted facilities like transport facility, potential market, innumerable shopping malls to confuse the potential customers, etc. is chosen as the research destination. But in spite of all these facilities why the consumers of Kolkata and outskirts are getting addicted to online shopping was the main reason to zero down on the abovementioned area to conduct research. Awan and Abbas (2015) stated the five demographic factors namely- age, gender, place of residence, occupation and income make a huge impact on the impulsive buying behaviour of the consumers, as a result of which income, location, occupation, previous purchase, and education are chosen as the basis of classification of the online consumers of Home Appliances.

Regression Analysis Model is a set of statistical processes for estimating a linear relationship between dependent and the mentioned five independent variables. This model will enable us to form a linear equation based on which the rating of the interested and uninterested online customers of home appliances can be done.

LITERATURE REVIEW

In spite of having abundant research papers on various aspects of online shopping, we could find very few research papers related to the objective of our paper where we have tried to develop a score of the online customers of Home Appliances. So we have lined up and presented the related papers to the best of our knowledge.

Wangl, Reesl and Liao (2002) aimed to classify online customers from the website data and predict their purchasing behaviours according to their demographics and attitudes toward online shopping. The tools used for classification were K-means clustering and multiple discriminate analysis (MDA). Shergill and Chen (2005) identified the four dominant factors as purchasing experiences. This paper stated that website security/privacy, website design and website reliability/fulfilment influences the online perception of Online consumers in New Zealand. Delafrooz, Paim, Haron, Sidin and Khatibi (2009) highlighted on the significance of attitude of the students towards online shopping through regression analysis. They suggested utilitarian orientations, convenience, price and wider selection as the important factors for regression analysis. Husin (2011) identified few factors like privacy, security, comfort, culture, demographics and site quality that influences the online customers in Indonesia. Among these six factors security, comfort, quality sites and similarity of attitudes of online users are the predominant factors. Privacy and demographic factors do not affect the online users of Indonesia much in case of online shopping. Sen (2014) stated that the cost factor, convenience factor, product factor and seller related factor are the four important factors influencing the online purchase of products in Kolkata. Al-Alwan M. and Al-Shirawi A. (2015) found out that security and trust are significantly related towards online shopping attitude of the consumers whereas most of the online consumers feel that they are overcharged during online transaction. Awan and Abbas (2015) observed that the demographic factors like age, gender, income and education plays a significant role in case of impulsive buying. They conducted a survey at Multan in Pakistan. Impulsive buying plays a major role in case of online marketing. Niharika & Satinder (2015) stated that post globalization, due to the closeness of various nations different sector has undergone through significant changes. These changes has resulted to the emergence of internet and e-commerce which is now one of the fastest growing technologies and are playing the main role in the day to day business activities. Indrajaya and Ali (2017) highlighted that both ease of shopping and product quality has significant relationship on online store shopping. Magesh and Balaji

(2018) analysed that to extract the E-Tailer Loyalty the factors that play significant role in online retailing are- Attention, Enthusiasm, Identification, Absorption and Interaction respectively. Ghosh Sarkar, Mukherjee and Lahiri (2020) have classified the Online Customers of Home Appliances into two disjoint classes that is interested and uninterested groups using Neural Network based on five demographic attributes namely- age, gender, place of residence, occupation and income.

During this unexpected global shutdown due to the outbreak of noble coronavirus, Debnath (2020) perceived that during this pandemic period high price rise of the products and delayed online service has highly influenced the consumer purchase behaviour. The researcher also explored the awareness level of the online buyers as well as the challenges of the online buying pattern during this pandemic situation. Sharma and Jhamb (2020) aimed to reflect the various issues and perspectives of online marketing due to COVID-19. They observed that in this pandemic situation the customers are progressively getting inclined towards this virtual mode of shopping. Many new challenges were also enforced due to this global lockdown thereby resulting in the closure of international borders.

After going through the research papers it is perceived that though the online shopping as a whole along with the consumer behaviour analysis and factor analysis is mentioned but development of score of customers by using Multiple Regression Analysis and optimizing the developed parameters in the sphere of home appliances and that too in Kolkata during this pandemic situation are not addressed till date.

RESEARCH GAP

While going through the process of literature review of the related topics both from national as well as international journals prior to coronavirus as well as during the lockdown or pandemic situation, we found no such study has been carried out in Kolkata or West Bengal or even India till date where customer rating is carried out using Regression Analysis. To the best of our knowledge, this research work is a pioneering work in the field of Online Marketing. So, the main focus of this research paper is to develop a regression equation to rate the interested online customers of Home Appliances in Kolkata and suburbs using the parameters- income, location, occupation, previous purchase, and education and optimize them using Regression Analysis, since this area of work in the field of Online Marketing is yet to be explored.

OBJECTIVE OF THE STUDY

The pertinent analytical study aims to explore and develop a Regression Model in order to rate the customers of online shopping of home appliances in and around Kolkata during this pandemic situation to cope up with this new normal life, which is quiet lagging behind compared to other cities.

- To develop a score or rate the customers with respect to their online purchase behaviour towards home appliances due to pandemic based on five independent variables of their demographic profile, such as income, location, occupation, pre COVID-19 online purchase, and education.
- To frame a Regression model which would be used for the above rating purpose.
- To optimize the developed parameters.
- To test the efficiency of the newly constructed Regression model in order to judge its suitability in customer gradation.
- To review the existing literature on the aforesaid topic and to compare our results with them.

RESEARCH METHODOLOGY

Research Methodology is a systematic process of collecting, organising and analysing data. The study intends to form a Linear Regression Analysis model to rate the interested customers based on five demographic attribute like income, location, occupation, pre pandemic purchase, and education regarding their purchase of home appliances through internet in Kolkata and outskirts. It also intends to optimize the parameters and test the efficiency of the developed model. Population of the study was restricted to users as well as non-users of home appliances purchased through online shopping. In order to study the above stated objectives we have resorted mostly on primary data. A well-structured questionnaire was framed through which personal interview was conducted over telephone or information was gathered through Google Forms distributed through the network of friends and relatives.

The geographic territory was restricted to Kolkata and outskirts including Sreerampore, Haripal, Barasat, Barrackpore, Howrah, Liluah and Bandel. (Questionnaire is given in Annexure I).

Data collection was mainly done during the lockdown phase covering the timeframe of May to August 2020 in Kolkata and the abovementioned outskirts. By going through 112 filled up Google forms, we found out that only 107 forms completely filled up. Whereas 95 forms were found to be consistent and qualified for analysis. So, the entire data set contains entries of 95 customers as collected through convenient sampling (as per availability and willingness) without replacement which is not purely random-since for Kolkata and outskirts due to lack of suitable options we have gone through convenient sampling.

The information collected during data collection was generated, analysed and interpreted with the help of SPSS 20 software.

Table 1: Sampling Summary

Data Collection Period & Region	Sampling Method	Observation Unit	Circulated and Submitted Forms	Completely Filled Up	Consistent and Qualified for Analysis
During May & August, 2020 in Kolkata and outskirts including Sreerampore, Haripal, Barasat, Barrackpore, Howrah, Liluah and Bandel.	Not purely random but through convenient sampling (without replacement)	Individual Investors	112	107 (95.53%)	95 (84.82%)

Table 2: Descriptive Statistics for Qualified Respondents

Profile Attributes	Category	Count	%-age	Cumulative %	Central Tendency	Dispersion
Monthly Income	Below Rs. 10,000	10	10.5	10.5	Median= Rs.49,200	SD= Rs. 14,560
	Rs. (10,001-30,000)	25	26.3	36.8		
	Rs. (30,001-50,000)	33	34.7	71.6		
	Rs. (50,001-70,000)	17	17.9	89.5		
	Rs. (70,001-1,00,000)	6	6.3	95.8		
	Above Rs. 1,00,000	4	4.2	100		
Location	Kolkata	35	36.8	36.8	Mode= Kolkata	N.A
	Sreerampore	18	18.9	55.7		
	Haripal	13	13.7	69.4		
	Barasat	9	9.5	78.9		
	Barrackpore	5	5.3	84.2		
	Howrah	8	8.4	92.6		
	Liluah	4	4.2	96.8		
	Bandel	3	3.2	100		
Occupation	Unemployed	9	9.5	9.5	Mode= Service	N.A
	Service	37	38.9	48.4		
	Business	21	22.1	70.5		
	Self Employed	19	20.0	90.5		
	Others	9	9.5	100		
Pre COVID19 online Purchase	Yes	62	65.3	65.3	Mode= Yes	N.A
	No	33	34.7	100		
Education	Madhyamik	11	11.6	11.6	Mode= Graduate	
	Higher Secondary	21	22.1	33.7		
	Graduate	32	33.7	67.4		
	Post Graduate	21	22.1	89.5		
	Above Post	10	10.5	100		

The total dataset consists of 95 entries, out of which 1 entry is excluded since it is marked as outlier to obtain the score of the customers to test the proposed Regression Model.

The dependent variable was Customer Rating (Y) and the independent variables are (Constant), Monthly Income (X1), Location (X2), Occupation (X3), Pre COVID-19 online Purchase (X4) and Education (X5). Table 3, 4 and 5 summarises the Model, ANNOVA and Model

Coefficients in Multiple Regression Analysis respectively of the entire valid dataset of 95.

Table 3: Model

Model	R Square	R Square	Adjusted R	Std. Error of the Estimate
1	.9241 ^a	.8539	.8321	4.548

a Predictors: (Constant), Monthly Income (X1), Location (X2), Occupation (X3), Pre COVID-19 online Purchase (X4) and Education (X5).

In this analysis, it is observed that R which is actually the correlation between the predicted values and the observed value is .9241. R square (0.8539) is the square of this coefficient and it indicates the percentage of variation explained by the regression line out of the total variation. Here, the adjusted R square is 0.8321 which is actually used to compare models with the complexities.

Table 4: ANNOVA

Model	Sum of the Squares	Df	Mean Square	F	P
Regression	693.445	5	138.689	30.833	0.000***
Residual	400.320	89	4.498		
Total	1093.765	94			

- Dependent Variable: Have changed your medium of purchase of Home Appliances through online shopping due to COVID-19?
- Predictors: (Constant), Monthly Income (X1), Location (X2), Occupation (X3), Pre COVID-19 online Purchase (X4) and Education (X5).

*** Significant at $p < 0.001$

Table 5: Coefficient in Multiple Regression Analysis

Model	Unstandardized Coefficients		T	Sig.	Collinearity Statistics	VIF
	B	Std. Error				
(Constant)	61.712	3.089	19.923	.000		
Monthly Income (X1)	.057	.042	2.914	.001	.956	1.046

Table 5(Contd.)...

...Table 5(Contd.)

Location(X2)	3.016	.534	.468	.040	.933	1.072
Occupation						
1 (X3)	-1.903	.645	-.164	.050	.998	1.002
Pre COVID19						
Purchase (X4)	-.012	.014	-.856	.092	.903	1.108
Education (X5)	.836	.315	-8.974	.000	.852	1.173

The findings from 95 data samples are as follows:

- a. The multiple regression equation is

$$Y = 61.712 + 0.057 X_1 + 3.016 X_2 - 1.903 X_3 - 0.012 X_4 + 0.836 X_5.$$

- b. The df (Regression)=5 i.e. the number of predictor or independent variables -Monthly Income (X1), Location (X2), Occupation (X3), Pre COVID-19 online Purchase (X4) and Education (X5) and df (Residuals)= 89. {Total data sample (95)- Number of independent Variables(5)-(1) }.
- c. The obtained p-value < 0.001 implies that all the five independent variables namely- Monthly Income (X1), Location (X2), Occupation (X3), Pre COVID-19 online Purchase (X4) and Education (X5) have a great impact on the Rating of Online Customers of Home Appliances (Y).

In this equation the independent variables Monthly Income (X1), Location (X2) and Education (X5) are creating a positive impact on the dependent variable rating the Customers of Online Shopping of Home Appliances (Y) i.e. with the change of Location and Increase in the education of the customers, the chance of Online Shopping of Home Appliances increases. Whereas the other predictors- Occupation (X3) and Pre COVID-19 online Purchase (X4) are having a negative impact on the dependent variable (Y). Which means that with the increase of these variables the rating of the Online Customers of Home Appliances decreases.

The coefficient of X1 is 0.057 represents the partial effect of Monthly Income on the score of Online Shoppers of Home Appliances, holding the other four variables as constant. The estimated positive sign implies that such effect is positive on criterion variable (Y) that is Rating of Online Shoppers of Home Appliances and it would increase by 0.057 for every year increase in Monthly Income and this coefficient value is significant at 1% level.

The coefficient of X2 is 3.016 represents the partial effect of Location on the score of the customers of Online Shopping of Home Appliances, holding the other four variables as constant. The estimated positive sign implies that such effect is positive

on dependent variable (Y) i.e. Rating of Online Customers of Home Appliances and it would increase by 3.016 for every change in Location and this coefficient value is significant at 4% level.

The coefficient of X3 is -1.903 represents the partial effect of the Occupation on the rating of Online Shoppers of Home Appliances, holding the other four variables as constant. The estimated negative sign implies that such effect is negative on the Online Customers of Home Appliances and that would decrease by 1.903 for every change in occupation and this coefficient value is significant at 5% level.

The coefficient of X4 is -0.012 represents the partial effect of Pre COVID-19 online Purchase on the score of Online Shoppers of Home Appliances, holding the other four variables as constant. The estimated negative sign implies that such effect is negative on the score of Online Shopping of Home Appliances and that would decrease by .012 for every change in Pre COVID-19 online Purchase and this coefficient value is significant at 9.2% level.

The coefficient of X5 is 0.836 represents the partial effect of Education on the rating of the Online Customers of Home Appliances, holding the other four variables as constant. The estimated positive sign implies that such effect is positive on the mentioned score of the Customers of Home Appliances and that would increase by .836 for every change in Education and this coefficient value is significant at 0.1% level.

MANAGERIAL IMPLICATIONS

This study intends to analyse and rate the customer satisfaction and loyalty of online consumers of Home Appliances in Kolkata and suburbs keeping in mind the global pandemic caused due to outbreak of the noble coronavirus. Based on this rating of the customers the online vendors are expected to focus on the mentioned attributes (Monthly Income, Location of Residence, Occupation, Pre COVID-19 online Purchase record and Education) to retain and expand their customer database. The e- retailers with the help of internet can reach out more customers accelerate the distribution channels by optimising their resources. In this marketing platform customer experience has become a source of competitive advantage in the new normal era in the field of the Online Shopping. To cope up with the technological advancement as well as the current global lockdown scenario an uninterrupted research and development practise is needed to put an end to various unethical practises.

SCOPE OF FURTHER STUDY

The study has discussed a retrogression based rating of the online customers of Home Appliances in Kolkata and suburbs during this pandemic situation, optimised

the parameters developed through the proposed regression model. This paper also tests the efficiency of the newly constructed model to find out and judge its score amongst the customers. However there can be few more aspects that might be considered for critically analysing the impediments in the growth of online shopping of home appliances in Kolkata and outskirts. The parameters that are taken into consideration in this model for setting up the score for the online customers of Home Appliances are monthly income, location, occupation, pre COVID-19 online purchase and education. If required future research work may be conducted to highlight on few more parameters.

CONCLUSION

Online shopping of Home Appliances in Kolkata and outskirts is still at its inception stage though it is trying hard to gear up with the global mode of shopping during this pandemic situation. As per the conducted pilot survey we have developed customer rating based on five attributes. As already stated in the research gap, to the best of our knowledge, this research work is the trailblazer in the field of developing score of online consumers of Home Appliances using Multiple Regression Analysis. While going through the structured questionnaire we observed that though the major bulk of the customers have never conducted online shopping of Home Appliances but maximum of the probable customers are interested to buy all the three mentioned categories of home appliances through internet to cope up with this new normal mode of life caused due to the outbreak of noble coronavirus, in spite of having manifold facilities of ‘brick and mortar’ shopping. From which we can conclude that online purchase of home appliances is the phenomenon form of shopping due to its multiple variations. This score development of online customers of home appliances can be considered as a first step in the way of conducting a research to rate the customers for online shopping of home appliances in Kolkata and suburbs.

REFERENCES

- [1] Al-Alwan M. and Al-Shirawi A. (2015). An Investigation of Factors Influencing Online Shopping: An Explanatory Study in the Kingdom of Bahrain. *International Journal of Innovation and Knowledge Management in the Middle East and North Africa*, Vol. 4, No. 2, 1–10.
- [2] Awan Abdul Ghafoor and Abbas Nayyar (2015). Impact of Demographic Factors on Impulse Buying Behavior of Consumers in Multan-Pakistan. *European Journal of Business and Management*, Vol. 7, No. 22, 96–105.
- [3] Chiang Wei-yu Kevin, Zhang Dongsong and Zhou Lina (2004). Predicting and explaining patronage behaviour toward web and traditional stores using neural networks: A comparative analysis with logistic regression. *Decision Support Systems* 41, 514–531.
- [4] Delafrooz Narges, Paim Laily H., Haron Sharifah Azizah, Sidin Samsinar M. and Khatibi Ali (2009). Factors affecting student’s attitude towards online shopping. *African Journal of Business Management*, Vol. 3, No. 5, 200–209.

- [5] Debnath Sucharita (2020). Impact of COVID-19 on Consumer Purchase Behaviour in Retail Sector - Study Based in Kolkata Area. *Purakala*, Vol. 31, No. 56, 103–115.
- [6] Gupta Nisha and Jain Rajiv (2017). Consumer Behaviour towards E commerce: Online Shopping. International Conference on Recent development in Engineering Science, Humanities and Management organised by NITTTR, Chandigarh, Vol. 3, 56–68.
- [7] Ghosh Sarkar, Mukherjee and Lahiri (2020). Deep Learning-Based Classification of Customers Towards Online Purchase Behaviour: A Recent Empirical Study for Home Appliances. *International Journal of Online Marketing*, Vol. 10, No. 4, 74–86.
- [8] Iyer, R., & Eastman, J. K. (2006). The elderly and their attitudes toward the internet: the impact on internet use, purchase, and comparison shopping. *Journal of Marketing Theory and Practice*, Vol. 14, No. 1, 57–67.
- [9] Indrajaya H. Sonny and Ali Hapzi (2017). Shopping Analysis in on Line Shop with Young People. *International Journal of Social Sciences and Humanities Invention*, Vol. 4, No. 8, 3797–3802.
- [10] Kotler, P. and Keller, K. (2011). *Marketing Management*. London: Pearson Education, Ed. 14.
- [11] Kakkar Misha and Upadhyay Divya (2013). Web Browsing Behaviors Based Age Detection. *International Journal of Soft Computing and Engineering (IJSCE)*, Vol. 3, No. 1, 99–101.
- [12] Kinker Manisha and Shukla N.K. (2016). An Analysis of Consumer Behaviours towards Online Shopping of Electronic Goods With special reference to Bhopal and Jabalpur city. *International Journal of Innovation and Applied Studies*, Vol. 14, No. 1, 218–235.
- [13] Kanimozhi, M.K., & Revathy, B. (2016). Factors influencing online shopping behaviour: The mediating role of purchase intention.
- [14] Lin Binshan and Bruwer Johan (1995). Neural Network Application in Marketing. *Journal of Computer Information System*, Vol.36, No. 2, 15–20.
- [15] Liu James and You Jane (2003). Smart Shopper: An Agent-Based Web-Mining Approach to Internet Shopping. *IEEE Transactions on Fuzzy Systems*, Vol. 11, No. 2, 226–237.
- [16] Lee Gwo-Guang and Lin Hsiu-Fen (2005). Customer perceptions of e-service quality in online shopping. *International Journal of Retail & Distribution Management*, Vol. 33, No. 2, 161–176.
- [17] Lahiri Isita and Ghosh Sarkar Juin (2018). Consumers' Online Buying Behaviour: A Study with Reference to Home Appliances in Kolkata. *International Journal of Business and Management Invention*, Vol. 7, No. 12, 1–8.
- [18] Mokhtar Noor Fadhiha (2015). Internet Marketing Adoption by Small Business Enterprises in Malaysia. *International Journal of Business and Social Science*, Vol. 6, No. 1, 59–65.
- [19] Magesh S. and Balaji B. (2018). Customer Engagement in Online Retailing: A Regression Analysis. *International Journal of Creative Research Thought*, Vol. 6, No. 1, 61–66.
- [20] Niharika and Satinder (2015). A study of Internet Marketing in India: Challenges and Opportunities. *International Journal of Science Technology and Management*, Vol. 4, No.11, 15–37.
- [21] Nittala Rajyalakshmi (2015). Factors Influencing Online Shopping Behaviour of Urban Consumers in India. *International Journal of Online Marketing*, Vol. 5, No. 1, 38–50.
- [22] Punj, G. (2012). Income effects on relative importance of two online purchase goals: Saving time versus saving money?. *Journal of Business Research*, Vol. 65, No. 5, 634–640.
- [23] Rotich Joseph Kiplang'at and Mukhongo Aaron (2015). Effects of Internet Marketing Strategies on Sale of Communication Services. A Case Study of Telkom Kenya-Eldoret Branch. *International Journal of Scientific and Research Publications*, Vol. 5, No. 10, 1–15.

- [24] Sheth J.N., Mittal B. and Newman B.I. (1999). *Customer Behaviour: Consumer Behaviour and Beyond*, Dryden Press, New York, NY.
- [25] Shergill Gurvinder S. and Chen Zhaobin (2005). Web-based Shopping: Consumers' Attitudes Towards Online Shopping in New Zealand. *Journal of Electronic Commerce Research*, Vol. 6, No. 2, 79–84.
- [26] Suki Norazah Mohd and Suki Norbayah Mohd (2013). Consumer Online Shopping Behavior: The Effect of Internet Marketing Environment, Product Charecteristics, Familiarity and Confidence, and Promotional Offer. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, Vol.7, No. 3, 814–819.
- [27] Sen Rahul Argha (2014). Online Shopping: A Study of the Factors Influencing Online Purchase of Products in Kolkata. *International Journal of Management and Commerce Innovations*, Vol. 2, No. 1, 44–52.
- [28] Saha Amit (2015). A Study on “The impact of online shopping upon retail trade business”. *IOSR Journal of Business and Management*, Vol. 4, No. 11, 74–78.
- [29] Sharma Anupam and Jhamb Deepika (2020). Changing Consumer Behaviours Towards Online Shopping- An Impact of COVID-19. *Academy of Marketing Studies Journal*, Vol. 24, No. 3, 1–10.
- [30] Thakur Preeti and Kaur Anupriya (2019). Online Shopping Attitude of Indian Tier 2 Consumers: Some Qualitative Insights. *International Journal of Online Marketing*, Vol. 9, No. 2, 13–26.
- [31] Vasudeva Savdeep and Chawla Sonia (2019). Does Gender, Age and Income Moderate the Relationship Between Mobile Banking Usage and Loyalty?. *International Journal of Online Marketing*, Vol. 9, No. 4, 1–18.
- [32] Wangl Mo, Reesl S.J. and Liao S.Y. (2002). *Building an online purchasing behaviour analytical system with neural network*. WIT Press, 225–227.
- [33] Wu, S.I. (2003). The relationship between consumer characteristics and attitude toward online shopping. *Marketing intelligence & planning*.
- [34] www.statista.com (23.01.2018).
- [35] <https://www.internetworldstats.com/top20.htm> (11.05.2019).
- [36] www.webmarketingpros.com/types-of-web-marketing.php (25.06.2019).

Application of Design Thinking to Learning and Development in the IT Industry

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Abstract: Design Thinking is a human-centric problem-solving approach that has been applied in various fields such as product and software development, education, art, music, etc. Many organizations such as Google, Apple, and GE are making immense use of design thinking in their processes. Human resource management in general and learning and development, in particular, can benefit extensively from design thinking because the “human element” is at the core of both fields. This study aims to identify employees’ pain points in the Learning and Development initiatives and analyze the factors affecting employee satisfaction with the training programs. Design thinking is applied to empathize with the employees to understand their needs and challenges, redefine the problem, ideate with the stakeholders to derive the best possible solutions, and finally create a prototype to represent the most effective solution. The final stage of design thinking that is testing, is not covered under the scope of this study. Both qualitative and quantitative research techniques are used for the study. The Convenience Sampling technique has been employed, and the primary data in the empathizing with the user stage has been collected from 231 respondents and from 32 respondents in the ideation stage through a questionnaire. SPSS V.20 is used to analyze the data obtained through respondents. Learning and development is a strategic activity, and most organizations invest heavily in it. The application of design thinking to learning and development aims to improve the effectiveness and the return of investment [ROI] on L&D initiatives.

Keywords: Design Thinking, Human-Centric, Learning and Development, Human Resource Management

JEL Classification Code: M53

INTRODUCTION

Design Thinking is both a mindset and a methodology. It has been used in a wide variety of applications such as product development, literature, application software development, art, music, and even business processes. Leading organizations of the world such as Apple, Infosys, General Electric, Google, Samsung etc have employed design thinking principles in their products and processes. Design thinking is a human-centric problem-solving approach. It is an iterative process to understand the user-perspectives, challenge basic assumptions, foster out-of-the-box thinking and derive

alternative solutions which might not be easily obtained by surface level understanding. The major factor which contributes to the popularity of design thinking is that it is a solution-based approach and refers to the collective process of thinking, applying, working using design principles.

PROCESS OF DESIGN THINKING

The most widely accepted design thinking model is the 5- stage Design Thinking model proposed by the Hasso-Plattner Institute of Design at Stanford, also known as d.school.

The 5 stages of Design Thinking according to the d.school are:

1. Empathise
2. Define the problem
3. Ideate
4. Prototype
5. Test

APPLICATION OF DESIGN THINKING TO LEARNING AND DEVELOPMENT

Learning and Development [L&D] is a strategic activity conducted to align the goals of employees with that of the organizational goals. It increases the employability as well as the productivity. But most of the L&D initiatives achieve partial success because they are not effective or impactful. This is because, it is designed in a top-down fashion where the needs and challenges of the employees are not considered.

“Human centrality” is at the very core of design thinking. This human element is the reason for the application of design thinking to Learning and Development. This process will help in creating more meaningful and human-centric processes for employees. Thus, design thinking can be a wonderful solution to understand the pain-points of learners and redesign in a way so as to improve the effectiveness.

REVIEW OF LITERATURE

The term ‘Design Thinking’ was coined in the year 1987 by Rowe in his book, Design Thinking (Rowe, 1987). Design Thinking is a concept which can be used both in theory and practice (Sköldbörg, Woodilla, & Çetinkaya, 2013) and can be viewed both as a process and a mindset. (Luka, 2014) states that design thinking is a human-centric problem-solving approach employed in teaching/learning to develop the skills required for modern era and enhance creativity and motivation. Plattner et al., (2009) describes Design Thinking as an approach that is systematic, user-oriented to solve real life problems. Instead of focusing on how the problem can be solved technically, the main focus is on addressing the users’ needs and challenges.

The characteristics or attributes of Design Thinking can be broadly classified in to 9 categories as: 1) ambiguity 2) collaboration 3) constructiveness 4) curiosity 5) empathy 6) holism 7) iteration 8) non-judgemental 9) openness (Baeck and Gremett ,2012).

Organizations today, perceive design as a strategic business tool to attain higher value for its products (Ivanova & Vodenova, 2018). (Dorst, 2011) elucidates the importance of framing as a design practice to solve open and complex problems in organizations by focussing on the core paradox.

Gachago, Morkel, Hitge, van Zyl & Ivala, (2017) has demonstrated an approach to apply design thinking in learning programs to make them more effective. They further state that design thinking can be thought of as a methodology for developing novel solutions for complex, realworld problems. Fostering design principles to facilitate innovative practices in learning is the intent of their research. Typical characteristics of a design thinking mindset are:

- Being comfortable with open-ended situations without stressing on predetermined outcomes.
- Being empathetic to the needs of the user and engaging in exploration with an open mindset.
- Managing uncertainty and taking calculated risks.
- Learning from failure and relying on personal judgment rather than accepting the existing solutions.

The principles of design thinking used in the learning strategy are: Focus on human values, embrace experimentation, bias towards action, radical collaboration, being mindful of the process, and crafting clarity.

A study conducted by (Gachago, Morkel, Zyl, & Ivala, 2017) on lecturers who had design thinking mindsets demonstrated that they were willing to listen to their learners (students) and to their needs and find individualised solutions that suit their contexts. These lecturers wanted to do what ‘works for them’, rather than abiding by institutional policy and guidelines. Having an understanding of learner needs and challenges made them mindful of differently positioned students, and did not hesitate to challenge dominant notions such as the digital natives discourse (Brown & Czerniewicz, 2010), and favoured context-sensitive approach to problems.

(Cousins, 2018) has applied design thinking to organizational learning in VUCA Environment. The study conducted helped in identifying design thinking as an action-based learning that is explorative and experimental in the VUCA Set-up. Design thinking uses a wide range of inputs from stakeholders and other environmental sources. It is an integrative approach and demonstrates an interrelationship between acquisition, assimilation and application of external knowledge by integrating the user into the learning process to increase the speed and efficiency of learning. This study also confirmed design thinking as a proven absorptive capacity process (Acklin, 2013;

Llamas, 2015) to promote organizational learning in VUCA environment, thus pre-empting disruption.

PROBLEM STATEMENT

- a. In most organizations, employee Learning and Development Program design has more of a **top-down approach**, where the management decides what employees should learn and how they should learn it, rather than catering to what and how they want to learn.
- b. Ineffective training programs can lead to low productivity, job-dissatisfaction, poor customer service, high turnover, and low-quality outputs of services and products.
- c. Innovative Learning and Development initiatives are being practiced in the industry today. However, the management fails to address the needs, challenges, and motivation of the employees regarding the L&D initiatives.
- d. Using a “one-size-fits-all” approach to Learning and Development in today’s highly diverse workforce is bound to yield diminishing returns (Finkelstein, 2019). Specially in the IT Industry, huge budgets are dedicated for employee Learning and Development initiatives since it is a capability building program which will help to achieve organizational goals.
- e. The application of Design Thinking to Learning and Development can be helpful in designing effective programs, and increase the Return on Training Investment because both the fields are human-centric .

RESEARCH QUESTIONS

- a. What are the pain points of employees in the Learning and Development process?
- b. What are the factors which impact employee satisfaction regarding the L&D Programs?
- c. Can Design Thinking make L&D Programs more impactful?
- d. If yes, what are the design thinking tools which can be used in the design of Learning and Development initiatives? [in relation to the previous question]

RESEARCH METHODOLOGY

RESEARCH OBJECTIVES

- a. To identify the pain points of employees in the Learning and Development process.
- b. To study the impact of factors affecting employee satisfaction regarding the L&D Programs.
- c. To verify if Design Thinking can make L&D more impactful.
- d. To propose a model for application of Design Thinking in L&D to enhance its effectiveness.

RESEARCH DESIGN

The following process was used to study the application of design thinking to learning and development.

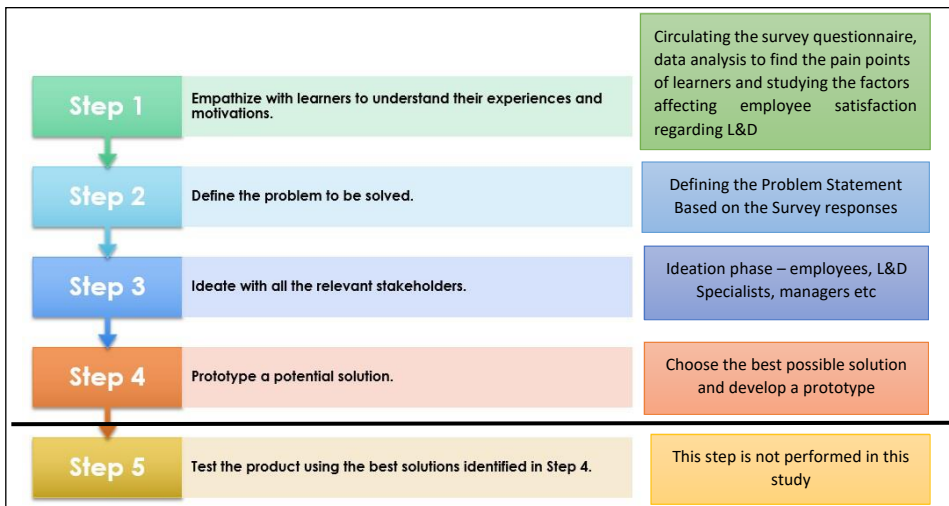


Fig. 1

STEP 1: Empathize with the User (learner)

In this stage, questionnaire was circulated amongst the learners [employees]. The purpose of the questionnaire was to empathize with the learner and understand the learner's needs, challenges, and motivations. In this stage, the principles of Design Thinking were applied in the preparation of the questionnaire.

Rationale behind Questionnaire Design

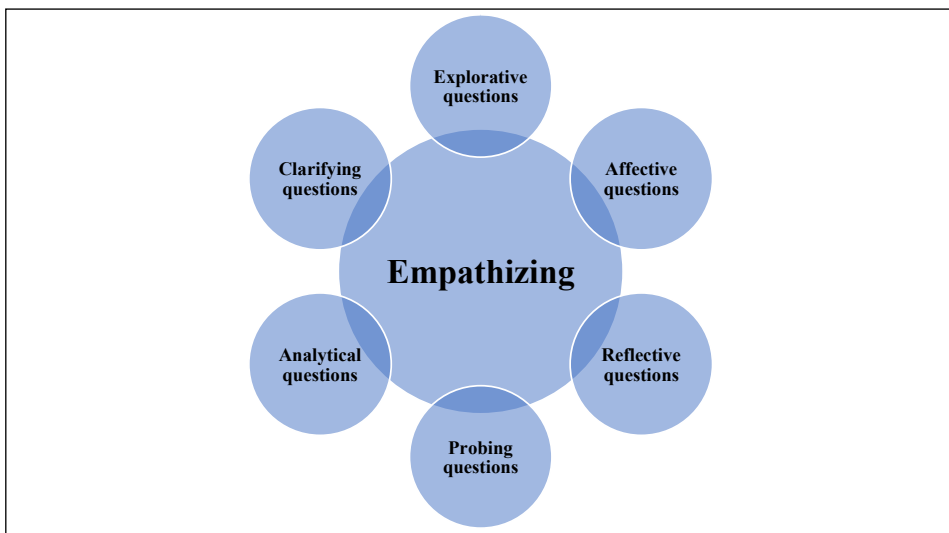


Fig. 2

PRIMARY DATA COLLECTION

The first stage of design thinking, that is empathizing with the user is also the source of the primary data for the study.

Sample Size and Characteristics

The sample consist of employees of the IT and ITeS industry who have work experience of atleast 1 year. 246 responses were received and 231 valid responses were considered for the purpose of the study.

Sampling Method

The sample units for this study were selected using a convenience sampling and judgement sampling. These sampling techniques were chosen since they are regarded as the least expensive, least time-consuming and the most convenient sampling techniques.

RESEARCH INSTRUMENT AND TOOLS

Research Instrument: Survey Questionnaire

1. The Primary data was collected using a survey questionnaire and it was circulated online through Google Forms.
2. The type of questions in the survey were Structured and Unconcealed.
3. Number of Questions: 32
4. Type of Questions: 25 close ended questions + 6 open ended question

Tools Used for Analysis

1. A Design Thinking Tool known as Empathy Map is used to analyze the learner needs and challenges after the first step of empathizing with the learner.
2. For Quantitative Analysis of the data, Statistical Package for Social Sciences (IBM SPSS), V.20 is used.

Tests performed using SPSS

1. Reliability Analysis
2. Simple Linear Regression
3. ANOVA
4. Correlation

DATA ANALYSIS AND INTERPRETATION

VALIDATION OF THE RESEARCH INSTRUMENT

- As we know that reliability analysis is conducted when there are multiple Likert – scale questions in a survey/questionnaire. The Cronbach's alpha indicates the measure of internal consistency ("reliability").

- In the survey questionnaire, there are 4 sets of Likert-Scale Questions. The internal consistency of each of these 4 sets are measured using Reliability Analysis in SPSS. Cronbach's Alpha > 0.7 indicates good internal consistency.

Reliability Analysis using SPSS

Table 1: Case Processing Summary

		N	%
Cases	Valid	231	100.0
	Excluded ^a	0	.0
	Total	231	100.0

a. Listwise deletion based on all variables in the procedure.

- The above table represents the Case Processing Summary which indicates the data or values that SPSS Program could not use in the analysis due to missing values or data. From the above table, it is indicated that all the values i.e., 100% of the sample in the data is used for analysis and no value or data is excluded from the analysis.

Employee Satisfaction regarding Learning and Development Initiatives

Table 2: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.737	.749	3

From the above table, which shows the Reliability Analysis of the scale mentioned, the Cronbach's Alpha is 0.737 which indicates a good level of internal consistency for our scale with this specific sample. It is indicated that the closer Cronbach's Alpha is 1.0, the greater is internal consistency of the variable in the scale.

Training Content Mean Score

Table 3: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.746	.760	5

From the above table, which shows the Reliability Analysis of the scale mentioned, the Cronbach's Alpha is 0.760 which indicates a good level of internal consistency for our scale with this specific sample.

Motivation to attend L&D Mean Score

Table 4: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.826	.828	5

From the above table, which shows the Reliability Analysis of the scale mentioned, the Cronbach's Alpha is 0.826 which indicates a good level of internal consistency for our scale with this specific sample.

Training Effectiveness Mean Score

Table 5: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.853	.854	5

From the above table, which shows the Reliability Analysis of the scale mentioned, the Cronbach's Alpha is 0.853 which indicates a good level of internal consistency for our scale with this specific sample.

Application of Design Thinking to Learning and Development

Table 6: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.849	.852	5

From the above table, which shows the Reliability Analysis of the scale mentioned, the Cronbach's Alpha is 0.849 which indicates a good level of internal consistency for our scale with this specific sample.

DATA ANALYSIS

Objective 1: To identify the pain points of employees in the Learning and Development process:

Tool 1: Empathy Map

An Empathy Map is used to visualize user attitudes and behaviours and helps to articulate the knowledge that we know about the particular type of user through the initial process of empathizing.

The main purpose of empathy map is:

1. Create a shared understanding of user needs
2. Assist in decision making

Format of Empathy Map: Traditional Empathy Maps have 4 quadrants : (Says, Thinks, Does, and Feels), with the user or persona at the centre.

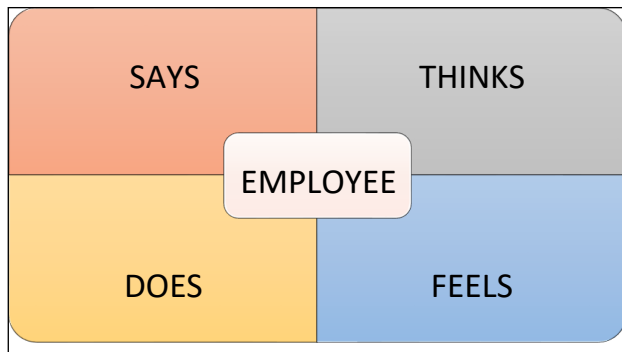


Fig. 3

Note: Usually Empathy Maps are created using a collaborative approach with the users. But here, data is first collected and then organized as an Empathy Map due to ease of the process.

Empathy Map of Employee regarding Learning and Development

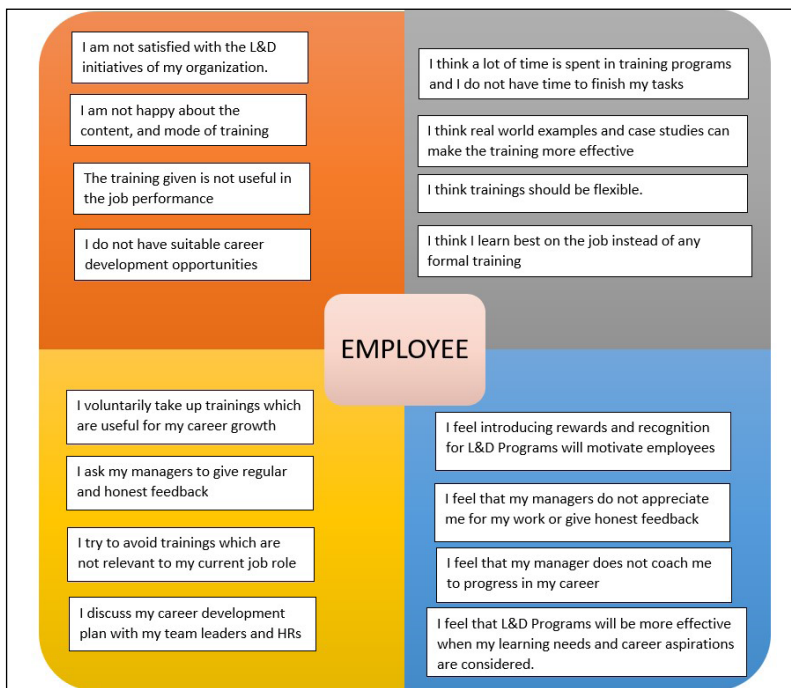


Fig. 4

Tool 2: Using One-way ANOVA to find if there is a difference in the employee satisfaction regarding L&D initiatives amongst different types of learners.

The One-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of two or more independent groups.

The 4 types of learners are identified using the study conducted by (Fleming & Mills, 1992) called as the “VARK Learning Styles”. VARK stands for Visual, : Auditory, Reading/Writing , and Kinesthetic.

Hypothesis

H₀: There is no difference in the employee satisfaction regarding L&D Programs amongst the 4 categories of learners.

H_a: There is a difference in the employee satisfaction regarding L&D Programs amongst the 4 categories of learners.

Dependent Variable: Employee satisfaction regarding L&D

Independent Variable: 4 categories of Learners: Auditory, Visual, Reading/Writing, and Kinesthetic

Table 7: ANOVA

Emp Satisfaction regarding L&D

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.141	3	4.714 .699	6.746	.000
Within Groups	158.625	227			
Total	172.766	230			

Table 8: Multiple Comparisons

Dependent Variable: Emp Satisfaction regarding L&D Tukey HSD

(I) 7. How do you learn best ?	(J) 7. How do you learn best ?	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	2 3	-.1228856	.2130000	.939	-.674164	.428393
	4	-.1629630	.2331311	.897	-.766344	.440418
1		-.6043210*	.2034935	.017	-1.130995	-.077647
	1	.1228856	.2130000	.939	-.428393	.674164
	3	-.0400774	.1727437	.996	-.487166	.407012
2		-.4814354*	.1299996	.002	-.817896	-.144975
	4	.1629630	.2331311	.897	-.440418	.766344
	1	.0400774	.1727437	.996	-.407012	.487166
	2	-.4413580*	.1608757	.033	-.857731	-.024986
3		.6043210*	.2034935	.017	.077647	1.130995
	4	.4814354*	.1299996	.002	.144975	.817896
4	12	.4413580*	.1608757	.033	.024986	.857731

From the above table, Significance value, $p = 0.000223$

Since p value < 0.05 [alpha at 95 % confidence level], we reject the null hypothesis.

Interpretation: There is a difference in the employee satisfaction regarding L&D Programs amongst the 4 categories of learners [Auditory, Visual, Reading/Writing , and Kinesthetic]

The second table implies that the difference is significant between:

- Category 1 and 4 [Audio and Kinesthetic]
- Category 2 and 4 [Visual and Kinesthetic]
- Category 3 and 4 [Verbal and Kinesthetic]

The above results imply that the approach adopted for L&D initiatives in organization are more suited to particular styles of learners and not to the other styles of learners.

For example: A Simulation / Workshop method of training is more effective for kinesthetic learners than reading/writing learner.

Tool 3: Correlation using SPSS

Correlation is a statistical technique which is used to measure the degree of association or dissociation between the two variables. It indicates how strongly the two variables are indicated to each other. Correlation is expressed in terms of correlation-coefficient and it always ranges from -1 to +1.

Using Correlation, we study if there is any significant relationship between the number of years of experience and the motivation to attend the L&D Programs.

Hypothesis:

H0: There is no significant relationship between the number of years of work experience and the Motivation to attend the L&D Programs.

Ha: There is a significant relationship between the number of years of work experience and the Motivation to attend the L&D Programs.

The two variables are Experience (Number of years) and Motivation Mean Score.

Table 9: Correlations

		Motivation-Mean Score	Experience
Motivation-Mean Score	Pearson Correlation	1	-.646**
	Sig. (2-tailed)		.000
	N		231
Experience	Pearson Correlation	231	
	Sig. (2-tailed)	-.646**	1
	N	.000	
		231	

**. Correlation is significant at the 0.01 level (2-tailed).

From the above table, Significance value, $p = 0.000$

Since $p \text{ value} < 0.05$ [alpha at 95 % confidence level], we reject the null hypothesis.

Interpretation: There is statistically significant correlation between the two variables: Experience (Number of years) and Motivation Mean Score

The value of Pearson Correlation is -0.646.

This indicates that there is moderate negative correlation between the two variables. In other words: **“As experience increases, the motivation to attend the L&D Programs decreases.”**

Using the Tools 1, 2 and 3: The pain points of employees (Learners) regarding L&D Programs are as listed below :

1. The employees are not comfortable with the pace of training delivery. Some find it too fast and some find it too slow.
2. The managers/ team leaders do not help the employees to excel in their career through coaching / mentoring.
3. The training content is complicated and disengaging.
4. A lot of work hours are spent in training which impacts their job performance.
5. Employees cannot retain the training content for a long time. They tend to forget since they do not have opportunities to apply the learnings of the training program.
6. The mode of training is sometimes problematic. Gen Z and millennials prefer e-learning whereas Gen X prefer traditional methods of training.
7. The Learning and Development initiatives are not relevant to their current job and career aspirations.
8. Employees are not motivated to attend the L&D programs. Particularly, senior employees are not willing to attend training programs.
9. Employees do not get regular and honest feedback during the L&D Program from their supervisors/ trainers.
10. The learning needs of employees are not considered during the design of the training program. All the employees are expected to learn at the same pace, and with the same style of content delivery.

Objective 2: To study the impact of factors affecting employee satisfaction regarding the L&D Programs

Tool : Simple Linear Regression

In this analysis, we study the impact of factors such as Training Content, Motivation to attend L&D programs and Training Effectiveness on the employee satisfaction regarding the L&D Programs.

To Study the Impact of Training Content on Employee Satisfaction regarding the L&D Programs

H0a: The overall model is not significant i.e.; the training content does not have a significant impact on the employee satisfaction regarding the L&D Programs.

H1a: The overall model is significant i.e.; the training content has a significant impact on the employee satisfaction regarding the L&D Programs.

Table 10: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.588a	.346	.339	.8305373	1.913

a. Predictors: (Constant), Training Content - Mean Score

b. Dependent Variable: Emp Satisfaction regarding L&D

The Adjusted R square value of 0.339 indicates 33.9 % of the variation in the Dependent variable Employee Satisfaction is caused by the predictor variable, Training Content. ; Durbin-Watson indicates the auto-correlation of data. Here, the value of Durbin-Watson = 1.913 indicates slight negative auto-correlation.

Table 11: ANOVA^a

Emp Satisfaction regarding L&D

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	34.353	1	34.353	49.802	.000 ^b
Residual	64.840	94	.690		
Total	99.193	95			

a. Dependent Variable: Emp Satisfaction regarding L&D

b. Predictors: (Constant), Training Content - Mean Score

Interpretation:

P-value = 0.0000001 < 0.05

Reject the null hypothesis H0a

At 95% confidence level, the overall model is significant and the training content has a significant impact on the employee satisfaction regarding the L&D Programs.

To Study the Impact of Motivation on Employee Satisfaction regarding the L&D Programs

H0b: The overall model is not significant i.e.; motivation does not have a significant impact on the employee satisfaction regarding the L&D Programs.

H1b: The overall model is significant i.e.; the motivation has a significant impact on the employee satisfaction regarding the L&D Programs.

Note: Here Motivation implies the Motivation Mean Score which is a measure of intrinsic and extrinsic motivation and other related factors.

Table 12: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.579 ^a	.336	.329	.8372740	1.981

a. Predictors: (Constant), Motivation-Mean Score

b. Dependent Variable: Emp Satisfaction regarding L&D

The Adjusted R square value of 0.329 indicates 32.9 % of the variation in the Dependent variable Employee Satisfaction is caused by the predictor variable, Motivation ; Durbin-Watson indicates the auto-correlation of data. Here, the value of Durbin-Watson = 1.981 indicates slight negative auto-correlation.

Table 13: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	33.297	1	33.297	47.497	.000 ^b
Residual	65.897	94	.701		
Total	99.193	95			

a. Dependent Variable: Emp Satisfaction regarding L&D

b. Predictors: (Constant), Motivation-Mean Score

Interpretation

P-value = 0.00002 < 0.05

Reject the null hypothesis H_{0b}

At 95% confidence level, the overall model is significant and motivation has a significant impact on the employee satisfaction regarding the L&D Programs.

To Study the Impact of Training Effectiveness on Employee Satisfaction regarding the L&D Programs.

H_{0c}: The overall model is not significant i.e.; the Training Effectiveness does not have a significant impact on the Employee Satisfaction regarding the L&D Programs.

H_{1c}: The overall model is significant i.e.; the Training Effectiveness has a significant impact on the Employee Satisfaction regarding the L&D Programs.

Table 14: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.499 ^a	.249	.241	.8903463	1.827

a. Predictors: (Constant), Training Effectiveness- Mean Score

b. Dependent Variable: Emp Satisfaction regarding L&D

The Adjusted R square value of 0.241 indicates that 24.1 % of the variation in the Dependent variable Employee Satisfaction is caused by the predictor variable, Training Effectiveness ;

Durbin-Watson indicates the auto-correlation of data. Here, the value of Durbin-Watson = 1.827 indicates negative auto-correlation.

Table 15: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	24.678	1	24.678	31.131	.000 ^b
Residual	74.515	94	.793		
Total	99.193	95			

a. Dependent Variable: Emp Satisfaction regarding L&D

b. Predictors: (Constant), Training Effectiveness- Mean Score

Interpretation:

P-value = 0.00011 < 0.05

Reject the null hypothesis H₀

At 95% confidence level, the overall model is significant and Training Effectiveness has a significant impact on the employee satisfaction regarding the L&D Programs.

STEP 2: Define the Problem to be Solved Problem

Definition

1. According to the respondents, the attributes which caused dissatisfaction towards the Learning and Development initiatives are :
 - Rigid timelines for the completion of the training program
 - Irrelevant to current job duties
 - The mode of training program [platform used]
 - Content of training program [difficult to comprehend]
 - Frequency of training [not conducted frequently]
2. The needs of different types of learners are not considered while designing the training programs.
3. The motivation to attend training programs reduce with the number of years of experience.
4. Employees do not have a say in the selection of courses in the training program.

STEP 3: Ideation with all the Relevant Stakeholders

- In this stage, we try to solve the problems identified through empathizing with the user and analysing survey responses using statistical tools by involving all the relevant stakeholders in the Learning and Development Programs such as employees, team leaders, H R managers, L&D specialists etc.
- The Design Thinking Tool known as Brain Dump is used in this process. Brain Dump can be described as Brainstorming on an individual level.
- In this study, Brain Dump was conducted online through Google Forms which had the open-ended questions based on the problems identified in Step 2.
- The intent of this activity is accumulating as many diverse ideas as possible from various perspectives to solve the problem. This activity encourages creative and outof-the-box thinking.
- 32 stakeholders were involved in the Brain Dump activity.
- A glimpse of the Brain Dump with feasible ideas is as shown below:



Fig. 5

STEP 4: Prototyping of the Solution

Basically, prototyping means producing a number of inexpensive, scaled down versions of the product with specific features to investigate the problem solutions generated in the previous steps.

The solutions are implemented within the prototypes are either accepted, improved and reexamined, or rejected on the basis of the users' experiences. and have a clearer view of how real users would behave, think, and feel when interacting with the end product. At the end of this process, we will have a better idea about the effectiveness of the solutions, potential difficulties in implementation and how the user (learner) will think and respond to the solution.

Since, we do not have a tangible problem or solution, we cannot produce a physical prototype.

However, we can choose some of the best possible solutions.

- a. Customizing the Training Content to suit the different Learning Styles. The feasibility of the approach was studied in the third step and the following results were generated:

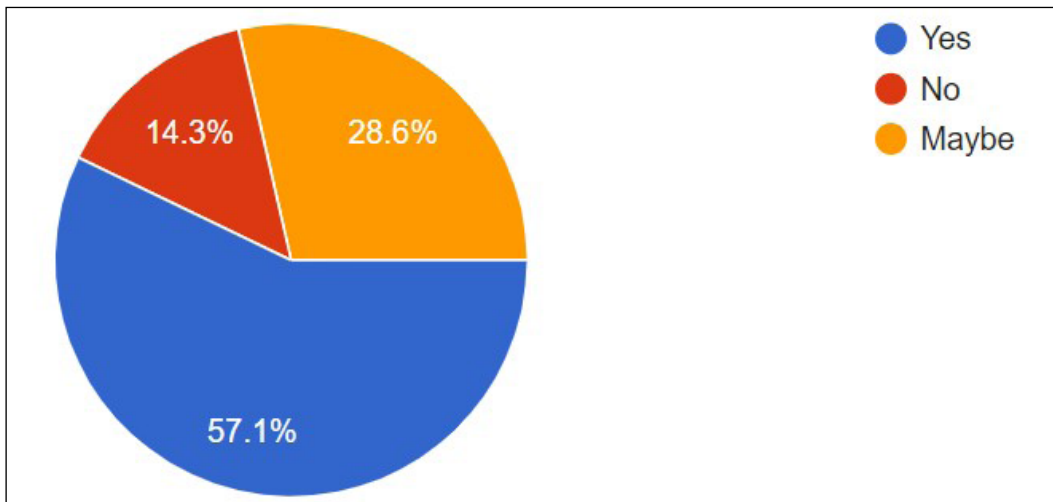


Fig. 6

- b. One-on-one approach to Developmental initiatives through mentoring can be followed for Senior employees.
- c. Trainers should act as Influencers [Charismatic Leadership]
- d. The L&D Programs should be designed by discussing the learning needs and career aspirations of employees. This will make the initiatives more meaningful to the employee and increase his motivation.

STEP 5: Testing the Prototype

In this phase, the best possible solutions identified during the prototyping phase will be rigorously tested. Alterations and refinements are made to make the solution more effective.

Testing is not conducted in this study due to lack of time and resources.

LEARNINGS AND CONCLUSION

The application of design thinking to learning and development in the IT industry demonstrated how simple actions can make the L&D initiatives more impactful. This study also demonstrated the need to involve the user in the development of the product intended to be used by him. Having deep understanding of the user and problems will help in coming up with the best possible solutions.

Also, this study conducted covered only 1 cycle of Design Thinking. But, design thinking is an iterative and non-linear process. Thus, several cycles might be required before arriving at the most effective solution to the problem.

FUTURE SCOPE

This study covered only the first four stages of Design Thinking. Testing the solution identified in the Prototyping Phase in real-time will uncover the extent to which the solution is successful, the implementation difficulties and the improvements which can be made.

The application of design thinking is even more relevant in the current COVID-19 pandemic situation to understand the employee needs and challenges in the remote set-up.

REFERENCES

- [1] Acklin, C. (2013). Design management absorption model: A framework to describe and measure the absorption of knowledge by SMEs with little or no prior experience. *Creativity and Innovation Management*, 147-160.
- [2] Baeck A., & Gremett P. (2012). Design thinking. In H. Degen, & X. Yuan (Eds.), *UX best practices: How to achieve more impact with user experience* (pp. 229–233).
- [3] Brown C., & Czerniewicz L. (2010). Debunking the ‘digital native’: Beyond digital apartheid, towards digital democracy. *Journal of Computer Assisted Learning*, 26(5), 357–369.
- [4] Cousins, B. (2018). Design Thinking: Organizational Learning in VUCA Environments. *Academy of Strategic Management Journal*, 17(2).
- [5] Dorst, K. (2011). The core of ‘design thinking’ and its application. *Design Studies*, 32(6), 521–532.
- [6] Finkelstein, S. (2019). Why a One-Size-Fits-All Approach to Employee Development Doesn’t Work. *Harvard Business Review*.
- [7] Fleming, N.D. & Mills, C. (1992). Not Another Inventory, Rather a Catalyst for Reflection. *To Improve the Academy*, 11, 137-155.
- [8] Gachago, D., Morkel, J., Hitge, L., van Zyl, I., & Ivala, E. (2017). Developing eLearning champions: a design thinking approach. *International Journal of Educational Technology in Higher Education*, 14(1). doi: 10.1186/s41239-017-0068-8.
- [9] Ivanova, D., & Vodenova, P. (2018). Design Thinking as a Innovation Tool in Organization. *Innovation in Woodworking Industry and Engineering Design*, 1(13), 25–32.
- [10] Llamas, A.C. (2015). *Human-centred innovation processes. The Case of Design Thinking in Nascent and Large Corporations*.

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- [11] Luka, I. (2014). Design Thinking in Pedagogy. *Journal of Education Culture and Society*, 2, 63–74.
- [12] Plattner, H.; Meinel, Ch. & Weinberg, U. (2009). Design Thinking. Innovation lernen, Ideenwelten öffnen. München.
- [13] Rowe, P.G. (n.d.). *Design Thinking*. Massachusetts: MIT Press.
- [14] Sköldberg, U.J., Woodilla, J., & Çetinkaya, M. (2013). Design Thinking: Past, Present and Possible Futures. *Creativity and Innovation Management*, 22(2), 121–145..

The Role of Emotionally Intelligent Academic Leadership on College Teachers' Organizational Commitment in India

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Abstract: This research aims to examine the effect of emotionally intelligent academic leadership on college teachers' organisational commitment in the Indian education sector. Based on the survey, data collected from 352 college teachers, teaching in arts and sciences colleges covering graduate and postgraduate level of students. Apart from assessing the reliability and validity of the constructs through confirmatory factor analysis, this research used descriptive statistics, median score analysis, regression analysis, and Spearman's rank correlation tests for relationships. Statistical results indicate that emotionally intelligent academic leadership affects some dimensions of employee's organisational commitment. This research is based on perceived emotionally intelligent academic leadership by college teachers on their academic leaders. Besides, the present study employed only quantitative techniques. This research is one of the first to examine the effect of emotionally intelligent academic leadership on college teachers' organisational commitment especially in the Indian education industry.

Keywords: Organizational Commitment Academic Leadership Emotional Intelligence Indian Higher Education College Teachers

JEL codes: I23, M1, M10

INTRODUCTION

One central area of public debate today is the topic of quality of education and academic environment in India after the announcement of National Educational Policy 2020 in India. Despite the progression of information technology and educational restructurings, the higher learning education systems face specific challenges and issues related to the education system. Emotional intelligence serves as a powerful tool that helps teachers to adjust their emotions and meet social challenges that disturb the balance of their emotions (Asrar-ul-Haq *et al.*, 2017). The term emotional intelligence (EQ) is fast-growing and accepted within the corporate world environment (Allam, 2011).

Academic leaders in the Indian education system should improve emotional intelligence as quality to enhance the level of organizational commitment among their

colleagues; college teachers. Human resource capital is always the foundation of any organization, especially in the education sector, the success and reputation among the parents and students cannot be achieved without committed employees. So academic leaders should not behave as traditional managers of the organizations. Instead, they should be leaders with motivation, self-respect, empathy and social skill. Academic leaders must use all these skills to support the department teachers to become more committed and successful in their academic profession. Academic leaders should take initiatives to ensure that all the teaching staff will get appreciation and encouragement from the top management to be committed. The significant implication of this study could be beneficial to top-level management in the education sector that they should give training and timely soft skill enhancement programme to their academic leader to become flexible as emotionally intelligent leaders. This approach will help academic leaders to turn as actual leaders than traditional managers and to remove the blockades between academic leaders and reporting teachers.

The research gap was found that there are very few related researches are conducted to categories the association between emotional intelligence, academic leadership and organizational commitment. However, the novelty of this research is that it explores the impact of emotionally intelligent academic leadership on college teachers' organizational commitment in the education industry, especially the higher learning institutes such as graduate and postgraduate colleges in India.

REVIEW OF LITERATURE

The term 'Emotional Intelligence' (EQ) was conceived and well-defined by Salovey and Mayer (Salovey & Mayer, 1990). According to him, EQ means "an individual's capacity to regulate his or her emotions appropriately and involves the ability to monitor one's own and others' feeling and emotions, to discriminate among them, and to use this information to guide one's own ting and action". Since the 1990s, Mayer, Salovey, and Caruso (John D. Mayer *et al.*, 2004) have written extensively on the concept of emotional intelligence and how emotional intelligence influences aspects of leadership within organizations. Goleman (1995) stated that leaders with sophisticated levels of emotional intelligence are an extra effective leader. Bar-On (1997) defined emotional intelligence as an array of competencies and skills that influence both an individual's ability to succeed in life and an individual's general, psychological well-being. Establishing the validity of the EQ dimensions for academic leaders is the primary objective of this study. The study identified emotional dimensions and leadership dimensions through content analysis of four EQ approaches (J. D. Mayer & Salovey, 1997; R. Bar-On, 2007; R. Boyatzis *et al.*, 2002; Goleman, 2001) and leadership approaches (Posner & Kouzes, 1993). These approaches formulated the dimensions of emotionally intelligent academic leadership. The identified dimensions are self-

awareness, managing emotions, motivating oneself, social skill and leadership skills. An Academic Leader is someone who is heading the institute: working as president/ Vicechancellor, or provost or chancellor at the university level, and Dear and Director, or Principal at the institutional level (Mohnot & Shaw, 2017; Kırıl & Başaran, 2019). Though many authors have recommended the critical role and necessity of academic leadership in higher education institutions, the term is not used consistently in the research world (Bikmoradi *et al.*, 2010). According to some researchers, the term academic leadership is to indicate the part of administered functions assigned to top managers in education institutions, presidents in university, vice-chancellors, deans, head of the departments and all of the academic professional with both leadership and managerial functions (Hecht *et al.*, 1999). It is very often discussed that academic leadership has two dimensions as Academic institute leadership and academic leadership as a teacher (Zafar *et al.*, 2019). Leadership that is required in higher education is referred to as Academic leadership, and they should motivate and inspire other faculty members (Siddique. A. *et al.* 2011).

Academic leaders in Indian higher education system can be defined as vice-chancellor of a university, principal of an affiliated college, dean of a college or head of departments of recognized colleges under a university (Yerande, 2017; Coco, 2011). However, there are studies that focus on the dean of the college or university as the academic leader who is responsible for the overall performance of the institution, and the dean's role is very comprehensive (Anthony & Antony, 2020; Hibbs & Sundby-Thorp, 2016; Justice, 2019; Sutton, 2020). Aloysius (2010) discovered through a study on academic leaders with five years of experience in Jaffna that revealed an encouraging relationship between emotional intelligence and academic leadership. According to staff (Slaff, 2011), a study conducted among the presidents of college and university in the Central and Eastern Pennsylvania revealed that most of the presidents scored an only average range of emotional intelligence.

The study argued the view that emotional intelligence is an essential condition for academic leaders and did not prove or approve the statement that higher emotional intelligence shows higher leadership effectiveness.

According to Bagučanskytė & Kaminskienė (2016) emphasize the organizational commitment of college teachers is regarded as highly recognized as a powerful tool for the success of educational institutions. Organizational commitment has been well-defined in numerous dissimilar ways. Organizational commitment has been defined as a “psychological condition that describes some desire for staying and the need for offering services at an organization” (Allen & Meyer, 1990). Investigations on organizational commitment of college teachers revealed that all the teachers are committed, but only the level of commitment is different. Organizational commitment has been theorized and scaled in a variety of ways.

Meyer and Allen (1991), primarily based on observations from numerous findings and varieties of groups in 1990, developed a multidimensional version of commitment comprising 3 additives particularly affective, continuance and normative. Affective dedication (AC) has been defined as an employee's psychological attachment to, identification with and involvement in the corporation. Continuance commitment (CC), on the other hand, has to do with one's cognizance of the material and psychological prices associated with leaving the present company. The third aspect that is normative dedication (NC) has to do with a worker's ideology or an experience or feeling of responsibilities closer to the enterprise and the person's moral perception that it is proper and honest to keep within the company (Peretomode & Bello, 2018). There are plenty of empirical studies explores the organizational commitment aspects and dimensions of college and university teachers in India and globe (Ahuja & Gupta, 2014; Bano et al., 2019; Bashir & Gani, 2020; Çoğaltay, 2015; Kalyani & Saravanan, 2016; Parveen, 2015; Qazi & Nazneen, 2016). However, research studies show that the aspects and level of organizational commitment were discussed in relation with managers' emotional intelligence in other studies too (Long & Kowang, 2015; Qureshi *et al.*, 2015). There is also a strong argument about the commitment level of university teachers who work at several universities have low levels of emotional attachment to the primary universities Lovakov, (2016).

Past academic researches on college teacher's commitment exposed that there is a correlation between organizational commitment and organizational citizenship behaviour among the teachers and faculties of academic institutions (Dan & Dandan, 2010; Salehi & Gholtash, 2011; Grego-Planer, 2019). Most of the research on emotional intelligence has been carried out on either college teachers or university teachers (e.g., Li *et al.*, 2018; P. & Tormey, 2012; Reddy *et al.*, 2012; Maklakova *et al.*, 2017; Sarkhosh & Rezaee, 2014; Mustafa & Amjad, 2011; Samanvitha & Jawahar, 2012), but the very little study was done on academic leader's emotional intelligence and its impact on college teachers' organizational commitment.

METHODOLOGY

The population considered in this research included full time and regular college teachers with designations of assistant professor, associate professor and professor from 10 educational districts in south India. The sample of the study has been worked out based on Krejcie & Morgan table (Krejcie & Morgan, 1970) and the final model of the study consisted of 352 college teachers from 10 educational districts. A total of 450 sets of questionnaires were distributed to proportionally and geographically selected teachers from 30 colleges under ten educational districts. Details of the sample are given in table-1. The incomplete questionnaires, outliers and unengaged responses were therefore omitted, and the acceptable sample size obtainable for analysis was 352, representing a response rate of 78.01%. This response frequency is highly associated with other empirical researches conducted in India (e.g. Sharma, 2015).

Table 1: Profile of Respondents

Category	Frequency	Percentage (100%)
Gender		
Male	158	44.9
Female	194	55.1
Third Gender	0	0
Total	352	100
Total Years of Work Experience		
03-05	93	26.4
06-10	134	38.1
Above 10	125	35.5
Total	352	100
Educational Qualifications		
PhD	130	36.9
MPhil	72	20.5
PG	149	42.3
Others	1	0.3
Total	352	100
Academic Designation		
Assistant Professor	299	84.9
Associate Professor	36	10.2
Professor	17	4.8
Total	352	100

The data for the current study was collected through a survey questionnaire. A pilot test is carried on to test the reliability of the instrument used in the actual research. Respondents have been requested to assess their agreement or disagreement with the usage of a five-point Likert scale, in which five indicated strong agreement and one indicated strong disagreement. The survey form was divided into four components: the first component turned into questions concerning demographic statistics of the respondents, and the second part comprised question items associated with emotionally intelligent academic leadership (EIAL). EIAL was measured using 16 questions that covered its five dimensions (i.e., self-awareness, managing emotions, motivating oneself, social skill and leadership skills). These items were adapted from (Hyde et al., 2002; Posner & Kouzes, 1993) Emotional Intelligence questionnaire leadership toolkit, developed by NHS London). The organizational commitment was scaled using 15 items that covered its three dimensions (i.e., affective commitment, continuance commitment and normative commitment). The items were adapted from Meyer and Allen (1990). The factor loading of the questions can be used to check the content validity of the scale model. Therefore, if any items that have a loading of better than 0.5 on or greater elements, then they'll be deemed to be having significant cross-loadings. From Table 2, we can observe that all items are giving the factor loadings of items which are more significant than 0.5 and 0.7.

Table 2: Factor Loading

Exploratory Factor Analysis N=352	
Variables	Factor Loading
Emotional Self-awareness 01	0.758
Emotional Self-awareness 02	0.798
Emotional Self-awareness 03	0.773
Managing Emotions 04	0.685
Managing Emotions 05	0.607
Managing Emotions 06	0.585
Motivating oneself 07	0.625
Motivating oneself 08	0.801
Motivating oneself 09	0.637
Social Skill 10	0.511
Social Skill 11	0.638
Social Skill 12	0.722
Leadership Skill 13	0.593
Leadership Skill 14	0.720
Leadership Skill 15	0.558
Leadership Skill 16	0.716
Affective Commitment 17	0.764
Affective Commitment 18	0.814
Affective Commitment 19	0.741
Affective Commitment 20	0.873
Affective Commitment 21	0.705
Continuance Commitment 22	0.694
Continuance Commitment 23	0.799
Continuance Commitment 24	0.820
Continuance Commitment 25	0.585
Continuance Commitment 26	0.534
Normative Commitment 27	0.852
Normative Commitment 28	0.655
Normative Commitment 29	0.680
Normative Commitment 30	0.759
Normative Commitment 31	0.792

The scales employed in the study were tested for reliability, which was determined with the help of Cronbach's α -coefficient, and total reliability of scales adapted for the survey with 41 items is 0.904. On conducting the reliability analysis, it was confirmed that the scales adopted were having internal consistency and all the 41 items were easily understandable and appropriate as seen in Table 3. The average variance extracted (AVE) ranged from 0.4569 (EIAL) and 0.553(OC) respectively, confirming convergent validity and implicitly, content validity except organizational commitment is closed to benchmark. Composite reliabilities ranged from EIAL, .930, and organizational commitment, .948 demonstrating reliability for all constructs displayed in Table 3.

Table 3: Reliability and Validity of Constructs

Variable	Indicator	Loading	Cronbach alpha	Composite reliability (CR)	AVE
EIAL (EMOTIONALLY INTELLIGENT ACADEMIC LEADERSHIP)	EIAL01	0.758	0.909	0.930	0.456
	EIAL02	0.798			
	EIAL03	0.773			
	EIAL04	0.685			
	EIAL05	0.607			
	EIAL06	0.585			
	EIAL07	0.625			
	EIAL08	0.801			
	EIAL09	0.637			
	EIAL10	0.511			
	EIAL11	0.638			
	EIAL12	0.722			
	EIAL13	0.593			
	EIAL14	0.720			
	EIAL15	0.558			
	EIAL16	0.716			
OC (ORGANIZATIONAL COMMITMENT)	OC 01	0.764	0.705	0.948	0.553
	OC 02	0.814			
	OC 03	0.741			
	OC 04	0.873			
	OC 05	0.705			
	OC 06	0.694			
	OC 07	0.799			
	OC 08	0.820			
	OC 09	0.585			
	OC 10	0.534			
	OC 11	0.852			
	OC 12	0.655			
	OC 13	0.680			
	OC 14	0.759			
	OC 15	0.792			

DATA ANALYSIS AND DISCUSSION

Having established the data suitability, exploratory factor analysis was conducted on the main components of emotionally intelligent academic leadership. The Kaiser-Meyer-Olkin measure of sampling adequacy test (0.927) and Bartlett's test of sphericity (0.000) indicate that the sample was appropriate for factor analysis as given Table-4.

Table 4: KMO and Bartlett's Test for EIAL

KMO and Bartlett's Test for EIAL	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.927
Bartlett's Test of Sphericity	
Approx. Chi-Square	2503.061
Sig.	.000
Variance Explained	58.92

Through factor analysis, items of emotional intelligence were explored and identified as self awareness, managing emotions, motivating oneself, social skills and leadership skills and these constructs explain 58.92% of the total variance

Table 5: KMO and Bartlett's Test for Organizational Commitment

KMO and Bartlett's Test for Organizational Commitment	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.700
Bartlett's Test of Sphericity	
Approx. Chi-Square	1038.350
Sig.	.000
Variance Explained	66.28

OBSERVATION

As depicted in Table 5, the Kaiser-Meyer-Olkin measure of sampling adequacy test (0.700) and Bartlett's test of sphericity (0.000) indicate that the sample was appropriate for factor analysis. Given these results, the exploratory factor analysis was conducted, and constructs explain 66.28% of the total variance. The factors for organizational commitments are affective commitment, normative commitment and continuous commitment.

Table 6: Descriptive Statistics

Variables	Mean	Median	Mode	Std. deviation	Skewness	Kurtosis
Emotionally Intelligent Academic Leadership(EIAL)	3.9886	4	4	0.76041	-1.525	4.043
Organizational Commitment(OC)	3.6449	4	4	0.68897	-0.769	0.713

From Table 6, we can observe data analysis on EIAL, Organizational Commitment and Organizational Citizenship Behaviour, reveals that the responses were negatively skewed with a value of -0.909, and thus can be inferred that the responses show a negative skewness, indicating that the data is not normally distributed. Again, kurtosis also had a positive value of 1.935. Thus, the distribution of responses can be concluded

that the distribution has heavier tails than the normal distribution. In short, the results can be summarised as the distribution of responses is peaked and possesses a thick tail when compared to normal distribution

Table 7: Median Score Analysis of Variables

	Strongly Disagree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)
Self-Awareness	12 (3.4)	16 (4.5)	36 (10.2)	201 (57)	87 (24.7)
Managing Emotions	11 (3)	26 (7.4)	44 (12.5)	195 (55.4)	76 (21.6)
Motivating Oneself	7 (2)	8 (2.3)	40 (11.4)	182 (51.7)	115 (32.7)
Social Skills	10 (2.8)	24 (6.8)	49 (14)	185 (52.6)	84 (24)
Leadership	5 (1.4)	15 (4.2)	45 (12.7)	174 (49.4)	113 (32)
EIAL	6 (1.7)	11(3)	37 (10.5)	224 (63.6)	74 (21)
Affective Commitment	2 (0.6)	15 (4.3)	70 (20)	203 (57.7)	62 (17.6)
Continuance Commitment	8 (2.3)	47 (13.4)	73 (20.7)	179 (51)	45 (12.8)
Normative Commitment	3 (1)	40 (11.4)	102 (29)	167 (47.4)	40 (11.4)
Organisational Commitment	1 (0.3)	22 (6.3)	96 (27.3)	215 (61)	18 (5)

From the Table 7, the results can be presented as out of 352 participants of the survey, there are 224 participants, which are 63.6% of the total population, agreed and acknowledged that their academic leaders are filled with the aspect of Emotionally Intelligent Academic Leadership. The results also show that self-awareness is the highest visible attribute of their emotionally intelligent academic leadership which is observed by 57% (201) of population. The results can be presented as out of 352 participants of the survey, there are 215 participants, which are 61% of the total population, agreed and acknowledged that they have organisational commitment. It is also can be interpreted that among the three types of commitments like affective, continuance and normative commitment, the highest level of commitment is expressed among the participants is the affective commitment which agreed by 203(57.7%) of the total population. The results can be interpreted as out of 352 participants of the survey, there are 201 participants, which are 56.6% of the total population, agreed and acknowledged that they are possessing Organizational Citizenship Behaviour.

Table 8: Regression Results-EIAL on OC

Model Summary	Variable Entered	R square	Adjusted R Square	Standard Error of Estimate	Results
One	Emotionally intelligent academic	0.186	0.184	6.547	F value=80.144 P value=.000
	Leadership, organizational commitment				
Regression Coefficients					
Model	Unstandardized Coefficients		Standardised Coefficients Beta	T Value	P Value
	B	Standard Error			
Constant	33.543	2.098		15.986	.000
Emotionally intelligent academic leadership	0.297	0.033	0.432	8.952	.000

The above Table 8, presents the regression analysis results to test the statistical significance of the relationship between emotionally intelligent academic leadership and organisational commitment. The adjusted R square value revealed that emotionally intelligent academic leadership accounted for 18% of the variance in organisational commitment. Further, the ANOVA results revealed that the model had a good fit a p-value is less than 0.05. The F value 80.144 is significant with $p = 0.000$ ($p \text{ value} < 0.05$), stipulating that the regression model statistically and significantly predicts the outcome variable. As the T value 8.952 is significant with $p = 0.000$ ($p \text{ value} < 0.05$), proving that it has EIAL as a significant influence, on organisational commitment as per the test result. Thus it can be concluded that reject the null hypothesis and accept the alternative.

Table 9: Correlations Results

Spearman's Correlation	Coefficient	EIAL	OC
Emotionally intelligent academic leadership	Correlation Coefficient	1	.442**
	Sig. (2-tailed)	.	0
	N	352	352
Organizational Commitment	Correlation Coefficient	.442**	1
	Sig. (2-tailed)	0	.
	N	352	352

The calculation of relation between emotionally intelligent academic leadership, organisational commitment and organisational citizenship behaviour is presented in Table 9. The results show that the Spearman coefficient (0.442, 0.434, 0.359) for 325 samples. This means a positive correlation between the three variables. The test of relation significantly shows that probability Sig. (2-tailed) is 0.000. The statistical

results can be summarised as there is a statistically and significantly positive correlation between Emotional Intelligence and Organisational Commitment, with $r = 0.442$ and p-value less than 0.01. Emotional intelligence is also positively related to Organisational Citizenship Behaviour an rvalue of 0.434 and p-value of 0.000, which is less than 0.01, which shows that the relationship is significant. Organisational Commitment and Organisational Citizenship Behaviour are also positively and statistically related to $r = 0.359$ and p-value of 0.000, that indicates that there exists a significant relationship between the two variables. Thus, the null hypothesis (H_0) can be rejected, and the alternate hypothesis (H_a) can be accepted.

DISCUSSION

This study was undertaken to understand the effect of emotionally intelligent academic leadership on organisational commitment of college teachers working in arts and science colleges in India. The study also analysed the relationship between organisational citizenship behaviour and organisational commitment among college teachers. The statistical results recommend that there is a reasonably significant relationship between emotionally intelligent academic leadership and organisational commitment of college teachers, consistent with previous studies (e.g. Dou *et al.*, 2017; Qureshi, 2015; Sahin *et al.*, 2013; Sinden *et al.*, 2004; Ukpong *et al.*, 2018). These findings highlight the essential role of emotionally intelligent academic leadership, inspiring employees to be more committed to the organisations. Leaders with emotional intelligence have a positive influence on follower's affective commitment, normative commitment and continuance commitment (Moin, 2018). Committed employees are a valuable source for the organisation's survival in today's competitive environment, and emotionally intelligent leader help to create an organisational environment that supports and enhances some aspects of employees creativity. Moreover, leaders with emotional intelligence are more likely to encourage employees to become more productive (Long & Kowang, 2015).

The Spearman rank correlation analysis used to assess the strength of the relation between three different variables, namely EIAL and OC. The correlation of all two variables were evaluated through 352 respondents. The results show that the Spearman coefficient (r_s) = (0.442, 0.434) for 325 samples. This means a positive correlation. The test of correlation significance shows that probability Sig. (2-tailed) is 0.000. The college teachers working in India consider that the majority of their academic leaders are emotionally intelligent. There is also a significant relationship between the organisational commitment and organisational citizenship behaviour of college teachers.

The findings also revealed that among 352 participants of the survey, which is 63% of the total population, agreed and acknowledged that their academic leaders are demonstrating emotional intelligence. The results also show that self-awareness is the highest recognised dimension of emotional intelligence which is observed by 57% of the population, similar to previous studies (Long & Kowang, 2015). The research presented that 61% of the employees who participated in the survey agreed to hold organisational commitment towards the organisation and a total of 57% possess the affective commitment level, which is the emotional attachment to the organisation, similar to a previous study (Absar & Swain, 2010). However, empirical research among the university teachers in India shows that the majority of the teachers possess continuance commitment as they calculate the risk and costs associated with leaving the present organisation (Bashir & Gani, 2020). In a nutshell, we can assume that college teachers who are working in universities possess continuance commitment as they wish to stay with the organisation for an extended period. In contrast, the college teachers from arts and science colleges have an affective commitment as they are emotionally attached to the organisation.

Moreover, Indian academic system practices are more concentrated over ranking and creating a world-class educational status (Banker & Bhal, 2020). They might be ignored by the behaviour aspects of academic teachers such as organisational commitment. Parker & Baporikar (2013) discussed the central crisis of the Indian higher education system. According to them, the Indian education system is facing a lack of trained, skilled, insightful and transparent academic leaders to make the required changes in the higher education system (Parker & Baporikar, 2013).

CONCLUSION

The aim of this study was to examine the effect of emotionally intelligent academic leadership on organizational commitment of college teachers from arts and science colleges in the Indian education sector. This research study is one of the first studies to investigate the anticipated relationship in India in general and Indian education sector in particular. This study explored that emotionally intelligent academic leadership significantly improves the organizational commitment of college teachers. The findings also showed that the majority of the teachers demonstrated the affective commitment and agreed that most of their academic leaders are emotionally intelligent. The findings attributed to typical traditions of the Indian education system because often academic leaders purely act as mere managers instead of leaders. The finding could also be attributed to the particular questions items used to measure organizational commitment which could have been perceived by respondents as measures of independence in the academic sector.

REFERENCES

- [1] Absar, S., & Swain, R.D. (2010). Organizational commitment of university teachers across disciplines and designations. *Management and Professionalization of Higher Education*. New Delhi: Macmillan Publisher India Ltd.
- [2] Ahuja, S., & Gupta, S. (2014). Organizational commitment and work engagement as a facilitator for sustaining higher education professionals. *International Journal of Recent Technology and Engineering*, 7(6s5), 1845–1851.
- [3] Akhter, I., & Haque, S.M. (2012). In search of academic excellence by becoming an effective leader: A study of academic leadership in higher education. *Global Journal of Management and Business Research*, 12(10).
- [4] Allam, Z. (2011). Emotional Intelligence at Workplace: A Psychological Review. In *Global Management Review*, 5(2), 71–81.
- [5] Allen, N.J. & Meyer, J.P. (1990). Organizational socialization tactics: A longitudinal analysis of links to newcomers' commitment and role orientation. *Academy of Management Journal*, 33(4), 847–858.
- [6] Allen, N.J., & Meyer, J.P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63(1), 1–18.
- [7] Aloysius, M.S.M.C.M. (2010). The Role Of Emotional Intelligence In Leadership Effectiveness. meeting of Jaffna University Research Conference, Jaffna, Sri Lanka.
- [8] Anthony, S., & Antony, J. (2020). Academic leadership - special or simple. In *Lean Six Sigma for Higher Education: Research and Practice* (pp. 55–67). World Scientific Publishing.
- [9] Asrar-ul-Haq, M., Anwar, S., & Hassan, M. (2017). Impact of emotional intelligence on teacher's performance in higher education institutions of Pakistan. In *Future Business Journal*, 3(2), 87–97.
- [10] Bagučanskytė, M., & Kaminskienė, L. (2016). Educational leadership in higher education: a scientific literature review. *IOSR Journal of Humanities and Social Science*. Dasna: International Organization of Scientific Research, 21(3), 93–98.
- [11] Banker, D. V., & Bhal, K. T. (2020). Creating world class universities: Roles and responsibilities for academic leaders in India. *Educational Management Administration & Leadership*, 48(3), 570–590.
- [12] Bano, K., Ishrat, A., & Mishra, K.K. (2019). Factors affecting organizational commitment of teachers in government and private universities. *International Journal of Scientific & Technology Research*, 8(8), 138–152.
- [13] Bar-On, R. (1997). Baron emotional quotient inventory. *Multi-health Systems*.
- [14] Bar-On, R. (2007). The Bar-On model of emotional intelligence: A valid, robust and applicable EI model. *Organizations and People*.
- [15] Bashir, B., & Gani, A. (2020). Correlates of Organisational Commitment Among University Teachers in India: An Empirical Investigation. *Asia-Pacific Journal of Management Research and Innovation*, 16(1), 7–20.
- [16] Bikmoradi, A., Brommels, M., Shoghli, A., Khorasani-Zavareh, D., & Masiello, I. (2010). Identifying challenges for academic leadership in medical universities in Iran. *Medical Education*, 44(5), 459–467.
- [17] Bolman, L.G., & Gallos, J.V. (2010). *Reframing Academic Leadership*. John Wiley & Sons.
- [18] Boyatzis, R., McKee, A., & Goleman, d. (2002). Reawakening your passion for work. *Harvard Business Review*, 80(4), 86–94.
- [19] Coco, C.M. (2011). Emotional intelligence in higher education: strategic implications for -academic leaders. *Journal of Higher Education Theory and Practice*, 11(2), 112–118.

- [20] Çoğaltay, N. (2015). *Organizational Commitment of Teachers: A Meta-Analysis Study for the Effect of Gender And Marital Status in Turkey*.
- [21] Dan, W., & Dan-dan, Z. (2010). Relationship among organizational support, organizational commitment and organizational citizenship behavior of university faculty members. In *2010 International Conference on Management Science & Engineering 17th Annual Conference Proceedings*.
- [22] Dou, D., Devos, G., & Valcke, M. (2017). The relationships between school autonomy gap, principal leadership, teachers' job satisfaction and organizational commitment. *Educational Management Administration & Leadership*, 45(6), 959–977.
- [23] Goleman, D. (1995). *Emotional Intelligence: Why It Can Matter More than IQ*. London: Bloomsbury Publishing.
- [24] Goleman, D. (2001). An EI-based theory of performance. *The Emotionally Intelligent Workplace: How to Select for, Measure, and Improve Emotional Intelligence in Individuals, Groups, and Organizations*, 1, 27–44.
- [25] Grego-Planer, D. (2019). The relationship between organizational commitment and organizational citizenship behaviors in the public and private sectors. *Sustainability*, 11(22), 63–95.
- [26] Hair, J.F., Ringle, C.M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long Range Planning*, 46(1–2), 1–12.
- [27] Hasani, K., Boroujerdi, S.S., & Sheikhesmaeili, S. (2013). The effect of organizational citizenship behavior on organizational commitment. *Global Business Perspectives*, 1(4), 452–470.
- [28] Hecht, I.W., Higgerson, M.L., Gmelch, W.H., & Tucker, A. (1999). The Department Chair as Academic Leader. *American Council on Education/Oryx Press Series on Higher Education*. Oryx Press, PO Box 33889, Phoenix, AZ 86067–3889.
- [29] Hibbs, I., & Sundby-thorp, V.M. (2016). *Harnessing Emotions: the Critical Role of Emotional Intelligence for Community College Leaders* [University of Washington Tacoma].
- [30] Hyde, A., Pethe, S., & Dhar, U. (2002). *Emotional Intelligence Scale (Eis)*. Lucknow: Vedant Publications.
- [31] Justice, G. (2019). *How to be a Dean*. Jhu Press.
- [32] Kalyani, V., & Saravanan, R. (2016). An Empirical Study on the Relationship between Personality and Affective Organizational Commitment with specific reference to Faculty in Management Education. *International Journal of Research in Organizational Behavior and Human Resource Management*, 4(3), 27–43.
- [33] Kiral, E., & Başaran, R. (2019). Academic leadership. In *Vocational Identity and Career Construction in Education* (pp. 238–257). IGI Global.
- [34] Krejcie, R.V., & Morgan, D.W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 30(3), 607–610.
- [35] Lee, K., & Allen, N.J. (2002). Organizational citizenship behavior and workplace deviance: the role of affect and cognitions. *The Journal of Applied Psychology*, 87(1), 131–142.
- [36] Li, M., Pérez-Díaz, P.A., Mao, Y., & Petrides, K.V. (2018). A Multilevel Model of Teachers' Job Performance: Understanding the Effects of Trait Emotional Intelligence, Job Satisfaction, and Organizational Trust. *Frontiers in Psychology*, 9, 2420.
- [37] Long, C.S., & kowang, t.O. (2015). The effect of leaders' emotional intelligence on employees' organization commitment in malaysia. *Mediterranean Journal of Social Sciences*, 6(1), 377.
- [38] Lovakov, A. (2016). Antecedents of organizational commitment among faculty: an exploratory study. *Tertiary Education and Management*, 22(2), 149–170.

- [39] Maklakova, N., Ilyasova, A., & Zagladina, E. (2017). Emotional Intelligence as a Basic Personality Competence of Future Teachers. In *INTED2017 Proceedings*.
- [40] Mayer, J.D., & Salovey, P. (1997). What is emotional intelligence. *Emotional Development and Emotional Intelligence: Educational Implications*, 3, 31.
- [41] Mayer, J.D., Salovey, P., & Caruso, D.R. (2004). Target articles:“ emotional intelligence: theory, findings, and implications.” *Psychological Inquiry*, 15(3), 197–215.
- [42] Meyer, J.P., & Allen, N.J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1(1), 61-89.
- [43] Mohnot, H., & Shaw, T. (2017). The study of academic leadership preparedness and leadership style in higher education. *International Journal of Education and Management Studies*, 7(3), 408–416.
- [44] Moin, M.F. (2018). The link between perceptions of leader emotion regulation and followers' organizational commitment. In *Journal of Management Development* , 37(2),178–187.
- [45] Mustafa, L., & Amjad, S. (2011). Emotional intelligence determining work attitudes and outcomes of university teachers: Evidence from Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*, 2(10), 240–259.
- [46] P.R., & Tormey, R. (2012). Assessing Emotional Intelligence and Its Impact in Caring Professions: The Value of a Mixed-Methods Approach in Emotional Intelligence Work with Teachers. In *Emotional Intelligence - New Perspectives and Applications*.
- [47] Parveen, N. (2015). Organizational commitment in relation to biographic variations among college teachers. *Journal of Research in Social Sciences*, 3(1), 96.
- [48] Peretomode, V.F., & Bello, S.O. (2018). Analysis of Teachers' Commitment and Dimensions of Organizational Commitment in Edo State Public Secondary Schools. *Journal of Educational and Social Research*, 8(3), 87–92.
- [49] Podsakoff, P.M., Ahearne, M., & MacKenzie, S.B. (1997). Organizational citizenship behavior and the quantity and quality of work group performance. *Journal of applied psychology*, 82(2), 262.
- [50] Posner, B.Z., & Kouzes, J.M. (1993). Psychometric properties of the leadership practices inventory-updated. *Educational and Psychological Measurement*, 53(1), 191–199.
- [51] Qazi, S., & Nazneen, A. (2016). A comparative study of organizational role stress and organizational commitment among the university faculty members of india and saudi arabia. *European Scientific Journal*, 12(31), 108–127.
- [52] Qureshi, I.A., Ali, R., Raza, H., & Whitty, M. (2015). The impact of leader's emotional intelligence on employee commitment, an empirical study in the sports industry of Sialkot, Pakistan. *IOSR Journal of Business and Management*, 17(5), 125–134.
- [53] Qureshi, M.A. (2015). Human resource practices in Pakistan banking sector: A conceptual framework including personality traits, emotional intelligence and employee performance. *International Journal of Scientific and Research Publication*, 5(1), 1–4.
- [54] Reddy, D.G.S., Sampath Reddy, G., Faculty Member, Department of Psychology, Kakatiya University, & Warangal. (2012). Emotional Intelligence Among Degree College Students. In *Global Journal For Research Analysis*, 3(1), 99–101.
- [55] Sahin, M.Y., Cengiz, R., & Abakay, U. (2013). The investigation of the ethical leadership roles of school administrators and organizational commitment of physical education teachers. In *International Journal of Academic Research*, 5(4), 153–160).

- [56] Salehi, M., & Gholtash, A. (2011). The relationship between job satisfaction, job burnout and organizational commitment with the organizational citizenship behavior among members of faculty in the Islamic Azad University –first district branches, in order to provide the appropriate model. In *Procedia - Social and Behavioral Sciences*, 15, 306–310.
- [57] Salovey, P., & Mayer, J.D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, 9(3), 185–211.
- [58] Samanvitha, S., & Jawahar, P.D. (2012). Emotional Intelligence as a Predictor of Job Satisfaction: A Study Amongst Faculty in India. *IUP Journal of Management Research*, 11(1).
- [59] Sarkhosh, M., & Rezaee, A.A. (2014). How does university teachers' emotional intelligence relate to their self-efficacy beliefs. *Porta Linguarum: Revista Internacional de Didáctica de Las Lenguas Extranjeras*, 21, 85–100.
- [60] Sharma, P. (2015). Organizational Commitment Among Faculty Members in India: A Study of Public and Private Technical Schools. *Global Business and Organizational Excellence*, 34(5), 30–38.
- [61] Siddique, A., Aslam, H.D., Khan, M., & Fatima, U. (2011). Impact Of Academic Leadership On Faculty's Motivation And Organizational effectiveness In Higher Education System. *International Journal of Academic Research*, 3(3).
- [62] Sinden, J., Hoy, W.K., & Sweetland, S.R. (2004). Enabling school structures: Principal leadership and organizational commitment of teachers. *Journal of School Leadership*, 14(2), 195-210.
- [63] Slaff, C.N. (2011). The emotional intelligence of college and university presidents: an exploratory study. *International Journal of Humanities and Social Science*, 1(11), 1–10.
- [64] Sutton, H. (2020). Understand the privileges, power of academic leadership. *Dean and provost*, 21(11), 12–12.
- [65] Thorndike, E.L. (1921). On the organization of intellect. *Psychological Review*, 28(2), 141.
- [66] Turnipseed, D.L., & Vandewaa, E.A. (2012). Relationship between emotional intelligence and organizational citizenship behavior. *Psychological Reports*, 110(3), 899–914.
- [67] UKPONG, N., Mbon, U., & Ekanem, E. (2018). Effective Leadership In Administration Of Secondary Schools In The 21st Century And Teachers' commitment To Work. In *Edulearn 18. 10th International Conference on Education and New Learning Technology (Palma, 2nd-4th of July, 2018): Conference Proceedings* (pp. 34613466). IATED Academy.
- [68] 2006Yerande, V. (2017). Quality in higher education through academic audit, academic leadership and autonomy in India. People: *International Journal of Social Sciences*, 3(2), 1385–1401.
- [69] Zafar, S.T., Hmedat, W., Chaubey, D.S., & Rehman, A. (2019). An exploration of academic leadership dynamics: A literature review. *International Journal on Leadership*, 7(1), 35.
- [70] Zeidner, M., Matthews, G., & Roberts, R.D. (2004). Emotional intelligence in the workplace: a critical review. *Applied Psychology = Psychologie Appliquee*, 53(3), 371–399.

Landuse-Landcover Change Detection of India, Its Correlation with Weather Parameters and its Future Projection

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Abstract: For spatial planning, management and land utilization, information on land use/land cover in the form of maps and statistical data is very salient. Since the beginning of the economic revolution in the early 1990s, the Land-Use and Land-Cover (LULC) scenario in India has undergone a dramatic switch. Such modifications involve a number of composite interactions between biophysical and socioeconomic factors. The purpose of this study is to evaluate the relationship between the LULC classes and weather parameters viz. precipitation and temperature. For further enlightenment and understanding, future projection of LULC has been estimated by the application of Sen's slope. The study revealed that from 2001 to 2019, among all the LULC classes, the highest positive percentage change was observed in permanent wetlands (35.65 %) and the highest negative percentage change was observed in grasslands (-12.35 %). Area wise highest positive net change was observed in agricultural land (22746 sq. km.) and highest negative net change was observed in grasslands (-30100 sq. km.). The future projection revealed negative slope in the temperature in the western India and a positive slope in the eastern counterpart. On the contrary, precipitation depicted positive slope in the western India and negative slope in the eastern India. For LULC, the Thar desert region, having negative slope indicated decrease in arid zone whereas the north-eastern India, having a negative slope, indicated decrease in forest cover. A few propositions for planning and new business ventures have also been discussed as an application of LULC change detection.

Keywords: Future Projection, Land-use/Land-cover change, Pearson Correlation, Remote Sensing and Geoinformatics, Sen's Slope.

INTRODUCTION

Landuse/landcover (LULC) change detection using remotely sensed images has been widely applied for environmental monitoring (Teng *et al.*, 2008). Landuse - Landcover change (LULCC); also known as land change is a general term for the human

modification of Earth's terrestrial surface. Humans have been modifying land to obtain food and other essentials for thousands of years, current rates, extents and intensities of LULCC are far greater than ever in history, driving unprecedented changes in ecosystems and environmental processes at local, regional and global scales. These changes encompass the greatest environmental concerns of human populations today, including climate change, biodiversity loss and the pollution of water, soils and air. Monitoring and mediating the negative consequences of LULCC while sustaining the production of essential resources has therefore become a major priority of researchers and policymakers around the world (Hassan *et al.*, 2016).

Empirical studies by researchers from diverse disciplines found that changes in land use/land cover has become key to many diverse applications such as agriculture, environment, ecology, forestry, geology and hydrology (Weng, 2001). These applications referred to crop land loss, soil degradation, urban expansion, water quality change etc. At the same time, according to (Lambin, 2016) in the past decades, a major project to study land use change has emerged as an international initiative and has gained great impetus in its efforts to understand forces driving land use change. These efforts have stimulated the interest of researchers to apply various techniques to detect and further model environmental dynamics at different levels.

Land use land cover (LULC) change detection based on remote sensing data is an important source of information for various decision support systems. Information derived from land use and land cover change detection is important to land conservation, sustainable development, and management of water and other resources (Tewabe & Fentahun, 2020).

Land use land cover changes have long-term as well as short-term effects. The short-term effects include urban flood (Sun *et al.*, 2013) (the one which happened in Kerala and happens in Bengaluru), change in groundwater level and composition ((Tahiru *et al.*, 2020) whereas the long-term effects are change in temperature (Gogoi *et al.*, 2019), hydrological aspects (Garg *et al.*, 2019), evapotranspiration ((Saddique *et al.*, 2020) and drought, decline in productivity, loss of wildlife and birds, and land degradation are the most widely perceived long-term impacts of these LULC changes (Ariti *et al.*, 2015).

India is a unique country in their physiographic, landscape, climatic regime and biodiversity. The country has diverse climatic conditions because of the sharp

variations in temperature and precipitation reactions geographically and seasonally. While the mercury touches 55°C in the Great Indian Desert, it drops to – 45°C in winter around Leh in Jammu and Kashmir. Mawsynram (Meghalaya) a place in India has the world's highest average rainfall (11,873 mm), while in Jaisalmer in Rajasthan has minimum rainfall of 10-25mm only. The climatic variation in the country provides a wide range of biological resources in their natural habitat and ecological diversity. There is a long list of flora and fauna in the account of the subcontinent due to the favourable climatic conditions. The increased LULCC has triggered severe climatic changes in the country which in turn is again affecting the LULC of the country. Increased number of severe weather conditions (such as – cyclones, droughts, floods etc.) are a reason of LULCC (Goswami *et al.*, 2006).

Due to varying climate changes and LULCC, the physiography of the country is tending to change over the years. The climate change has triggered changes in the weather parameters such as temperature, rainfall, relative humidity, solar insolation etc. Anthropogenic intervention has further deteriorated the physiographic conditions and enhanced the LULCC process. So, it is imperative to study the effect of LULCC over the physiography of the country and their correlation with the weather and demographic parameters.

STUDY AREA

The focused area of study for this project was the whole country India. India latitudinally extends from 8°N to 37°N and longitudinally from 65°E and 100°E. The average annual rainfall of the country varies from 300-650 mm and the average annual temperature of the country is 25.8° Celsius. It is the seventh largest country with 329 million hectares, the second most populated country with 1.336 billion inhabitants, and the world's most populous democracy. Guarded to the south by the Indian Ocean, the Arabian Sea to the southwest, the Bay of Bengal to the southeast, and the Great Himalayas to the north. Forests and agricultural land make up about 21% and 55% of the country's overall geographical area, respectively. Four seasons are observed annually by climate in India, i.e., southwest summer monsoon (June to August), northeast winter monsoon (December to February), spring or pre-monsoon (March to May) and post-monsoon autumn (March to May) (September to November). India receives 80% of the total annual rainfall during the southwestern monsoon. The NE monsoon is cold and dry, but it brings heavy rainfall to southern India.

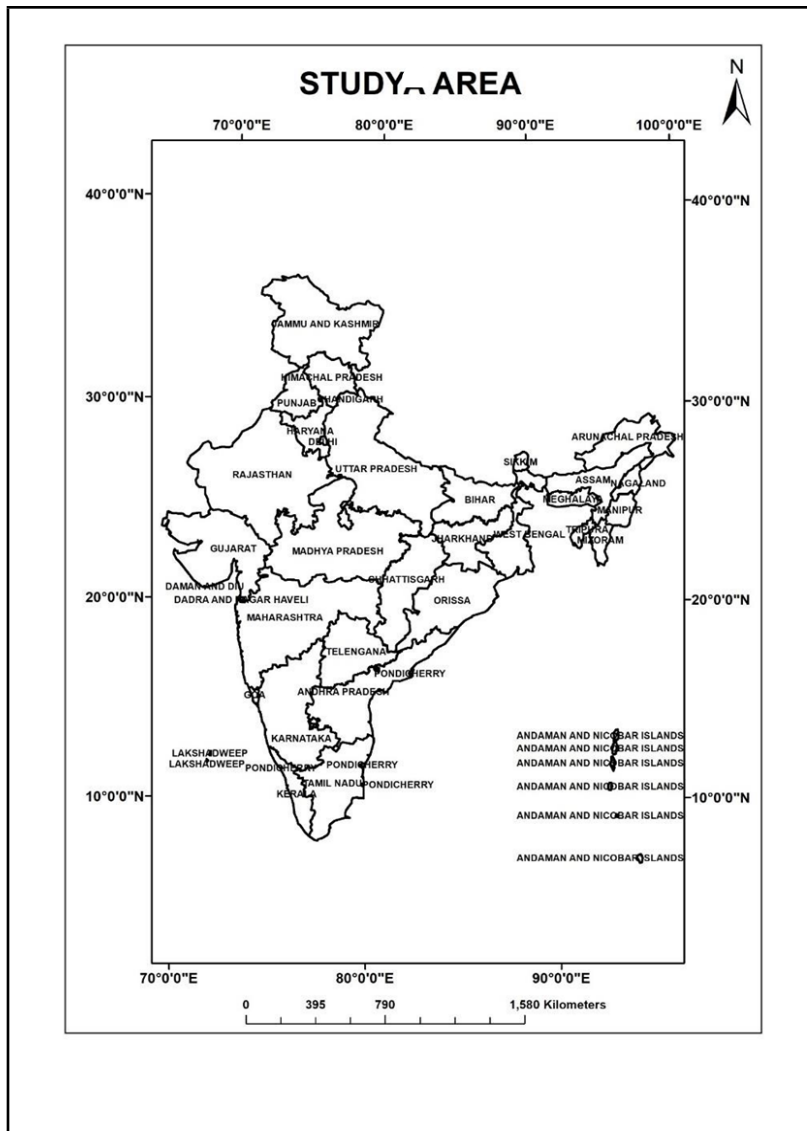


Fig. 1: Location Map of the Study Area

OBJECTIVES

The prime objectives of this study area:

1. To visualize the change in area of different LULC variables of India over the years
2. The correlation of the LULC variables with various weather parameters.
3. Future trend of LULC over Indian subcontinent with changing weather parameters.

DATA USED & METHODOLOGY

For LULC mapping, MODIS data has been used in this study. MODIS is an extensive program that provides images in 36 spectral bands between 0.405 and 14.385 μm using sensors on two satellites-Terra and Aqua (Srivastava *et al.*, 2013). MODIS images can be downloaded from the website <https://modis.gsfc.nasa.gov/data/>. Global MODIS LULC are structured to have continuous spatial and temporal land cover knowledge (Lunetta *et al.*, 2006). Global MCD12Q1 data are available on every 365 days basis at 250-m spatial resolution. It is gridded level-3 product in the Sinusoidal projection. The other datasets used for this study area rainfall and temperature datasets. The rainfall data have been downloaded from the Indian Meteorological Department (IMD) with a spatial resolution of $1^\circ * 1^\circ$. The temperature datasets have been downloaded from the Climatic Research Unit (CRU) having a spatial resolution of $0.5^\circ * 0.5^\circ$. All the datasets were downloaded from the year 2001 to 2019 having a temporal resolution of 365 days. The demographic data (population) was acquired from the World bank site (<https://data.worldbank.org/indicator/SP.POP.TOTL?locations=IN>).

Table 1: Depicting the Datasets Used for the Study

FEATURES	LULC DATA (MCD12Q1)	RAINFALL	TEMPERATURE
SAPTIAL RESOLUTION	250m*250m	1 deg * 1 deg	0.5 deg * 0.5 deg
TEMPORAL RESOLUTION	365 days	365 days	365 days
SOURCE	NASA	Indian Meteorological Department	European Space Agency

The methodology adopted for the study comprises of various statistical analyses. At first, the LULC datasets were downloaded from the Google Earth Engine from the year 2001 to 2019. Then the images were reprojected to UTM projection from the sinusoidal projection which was followed the area calculation of each and every Landuse/landcover classes for the abovementioned time period.

For the assessment of the LULC change over the years, comparative analysis was put to use. The formula used for comparative analysis is –

$$\text{Absolute difference} = \text{Final area} - \text{Initial area}$$

$$\text{Percentage difference} = (\text{Absolute difference}/\text{Initial area}) * 100$$

After the area calculation and obtaining the percentage difference, the correlation between the LULC variables and the weather parameters are required to be found. For the correlation of the LULC parameters and the weather parameters, Pearson correlation and regression were used. These processes were carried out in Microsoft excel. From the regression model, the squared R and the significance F were considered for the analysis to see the overall relation between the LULC and the weather parameters.

For the better understanding of the relation between these parameters, the Pearson correlation was used to exactly understand the relation between these variables.

For regression, the formula used is:

$$Y = \alpha + \beta x$$

Where Y is the dependent variable i.e., the LULC classes, x is the independent variables which are the weather parameters (precipitation, temperature) and the demographic parameter i.e., population, β is the slope of the line and α is the y-intercept.

For the Pearson correlation, the following formula was put to use:

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

Where r = correlation coefficient, x_i = values of the independent variables in a sample, $\bar{x}$ = mean of the values of the independent variables, y_i = values of the dependent variables in a sample and $\bar{y}$ = mean of the values of the dependent variables.

For the future prediction of LULC, rainfall and temperature, Sen's slope was used. This method was carried out in R using the formula:

$$\text{Sen's slope} = \text{Median} \left\{ \frac{x_j - x_i}{j - i} : i < j \right\}$$

Where x_i and x_j are the data values at times i and j ($i < j$), respectively.

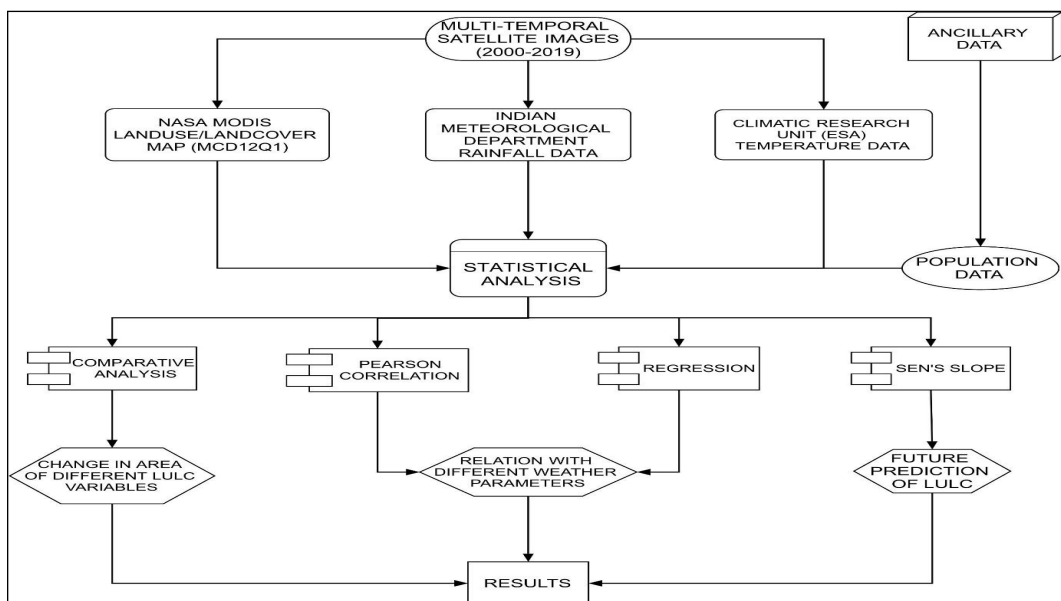


Fig. 2: Methodology Flowchart

RESULTS AND DISCUSSIONS

Land-cover maps obtained from the image classification are shown in figure 3.

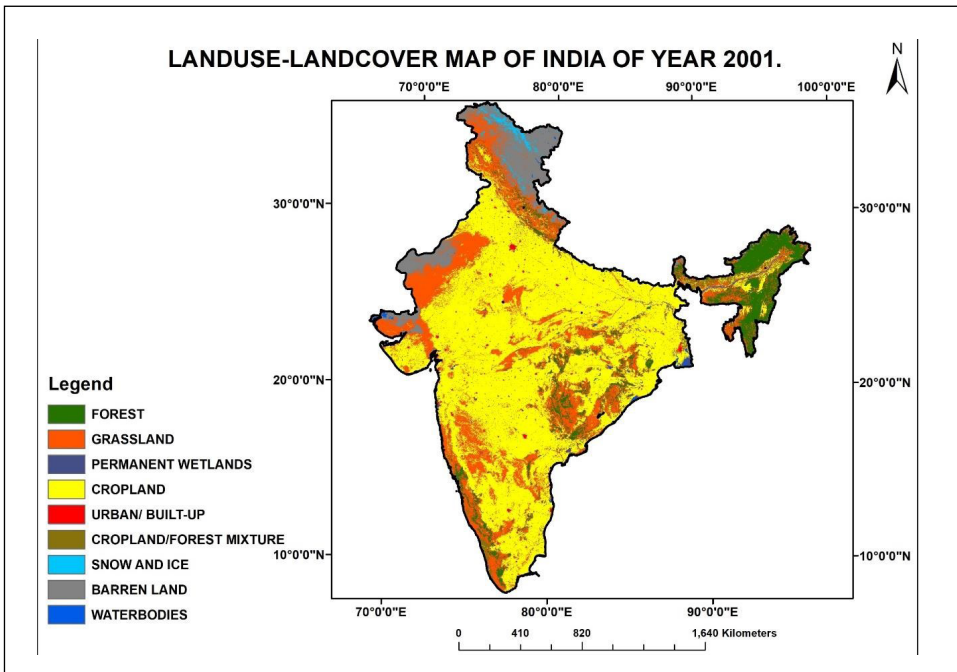


Fig. 3a

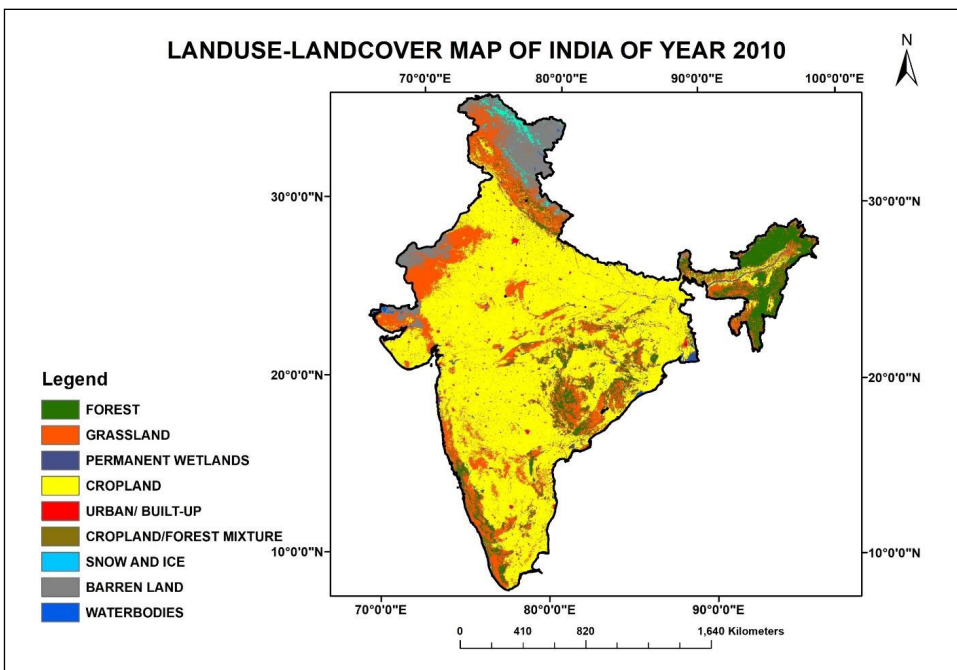


Fig. 3b

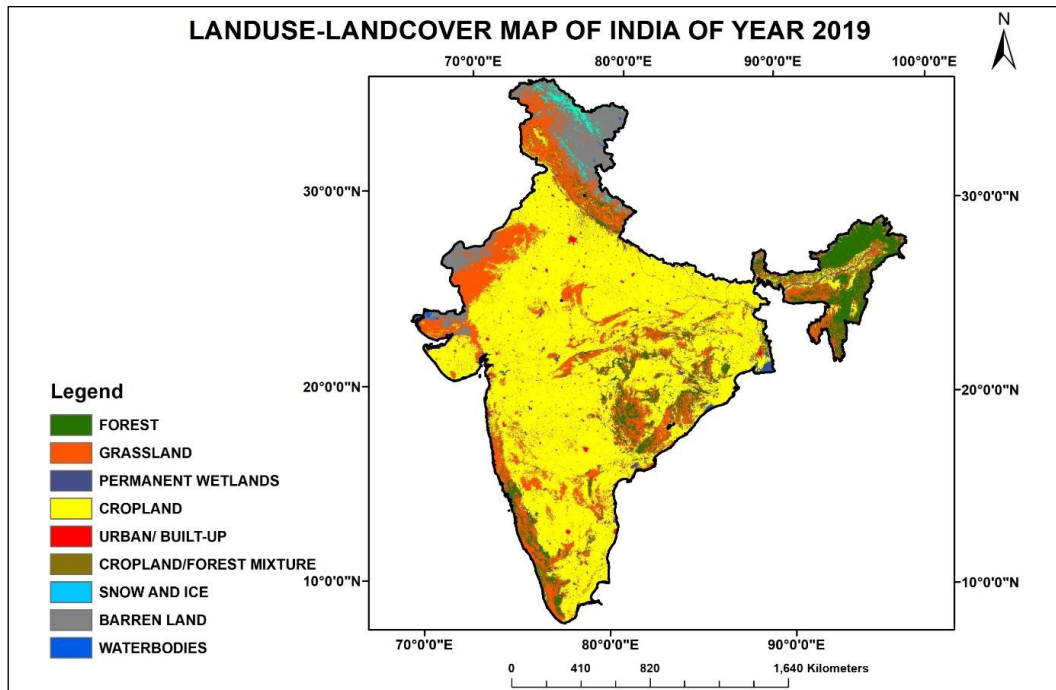


Fig. 3c: LULC Maps of India for Different Years

AREA (sq. km.)	FOREST	GRASSLAND	PERMANENT WETLANDS	AGRICULTURE	URBAN/ BUILT-UP LAND	CROPLAND/ FOREST MIXTURE	SNOW AND ICE	BARREN LAND	WATERBODIES
2001	86730.88	243805.25	2582.88	590623.50	10870.25	16562.56	6948.50	81363.50	7511.19
2002	87992.94	241233.31	2555.06	591756.94	10876.69	16428.44	6948.38	81682.06	7524.69
2003	89435.88	232717.31	2573.31	598921.56	10886.25	16352.00	7162.00	81399.56	7550.63
2004	91089.44	225498.31	2649.88	604273.88	10902.38	16316.81	7395.88	81136.94	7735.00
2005	92499.69	221644.44	2609.81	606390.69	10928.38	16400.88	7493.00	81231.50	7800.13
2006	93576.50	219586.06	2640.94	607453.75	10956.69	16435.63	7397.56	80985.44	7965.94
2007	94283.13	217115.69	2859.19	609790.50	10986.13	16365.44	7329.63	79749.81	8519.00
2008	94534.13	216914.44	2750.13	610458.31	11016.81	16331.56	7436.88	79256.94	8299.31
2009	95707.44	214965.13	2746.13	612426.63	11048.94	16099.00	7634.31	78244.19	8126.75
2010	96716.25	210014.44	2830.19	618771.50	11083.81	15957.69	7718.63	75752.81	8153.19
2011	96307.63	213227.19	3054.00	616909.19	11135.94	16498.44	7760.63	73057.69	9047.81
2012	95967.88	214424.63	3151.69	616118.25	11178.44	16942.56	7888.00	72222.50	9104.56
2013	96218.56	213794.44	3387.81	616396.19	11217.00	17448.44	7762.50	71858.44	8915.13
2014	95611.31	215478.69	3429.81	614558.75	11259.38	18142.94	7920.13	71770.81	8826.69
2015	95369.06	217495.38	3710.88	612184.38	11303.88	18949.88	8047.56	71297.13	8640.38
2016	95163.38	217650.63	3662.75	611421.06	11349.63	19774.63	8028.44	71422.94	8525.06
2017	97637.75	210391.00	3678.00	616418.00	11406.00	19477.56	7973.31	71555.38	8461.50
2018	93858.38	221737.50	3624.00	606256.69	11474.44	20740.88	8194.13	73057.00	8055.50
2019	95063.63	213704.50	3503.56	613100.25	11559.56	19900.69	8994.13	73096.56	8075.63

Fig. 4: Area of Different LULC classes Over the Years.

For analyzing the LULC change over the years, comparative analysis has been performed. The results show that there is significant change in the area of all the LULC variables. The highest negative percentage change from 2000 to 2019 is observed in grassland area (i.e., -12.35%) followed by barren land (-10.16%) whereas the highest

positive percentage change is observed in permanent wetlands (35.65%). Area wise, the lowest change from 2000 to 2019 is observed in waterbodies and the highest change is observed in agricultural area. The net change in the LULC variables has been plotted in a bar graph which shows that grassland and barren land has decreased over the years and the rest of the LULC classes have increased.

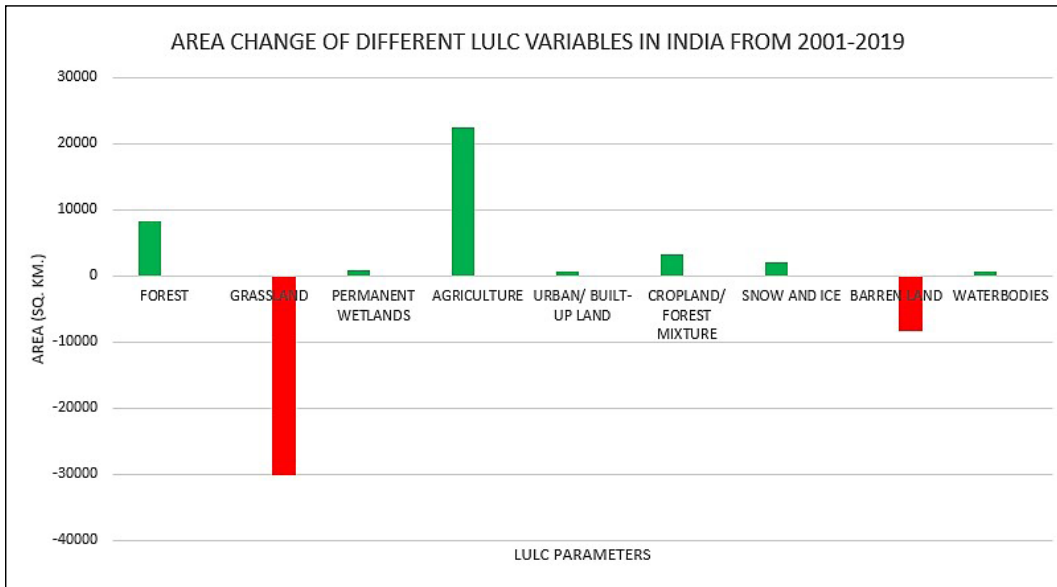


Fig. 5: Net Change in LULC Parameters Over the Years

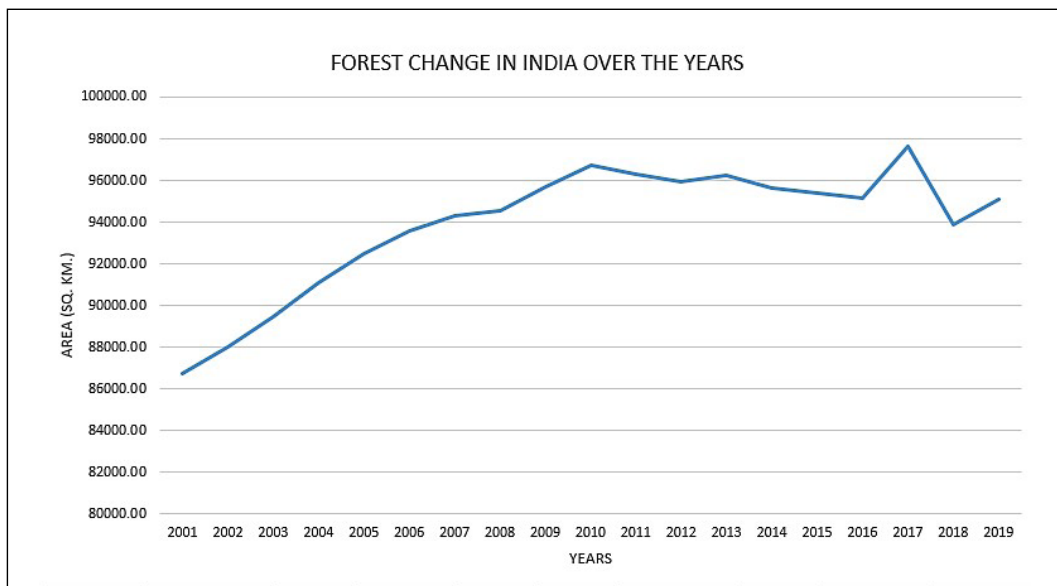


Fig. 6a

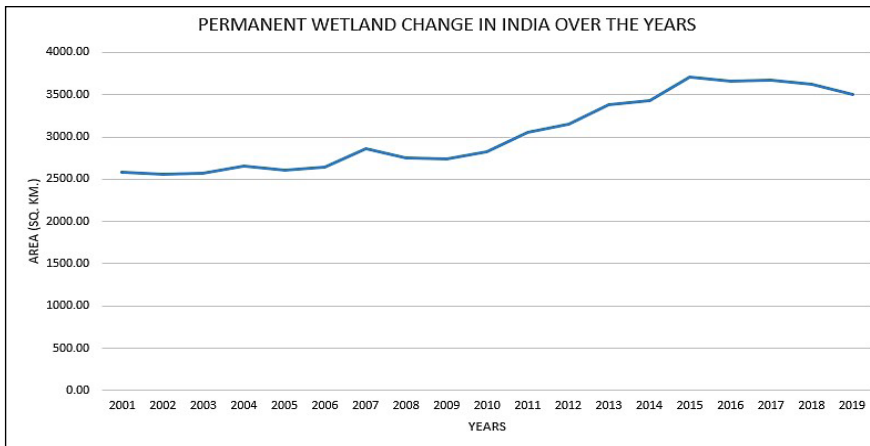


Fig. 6b

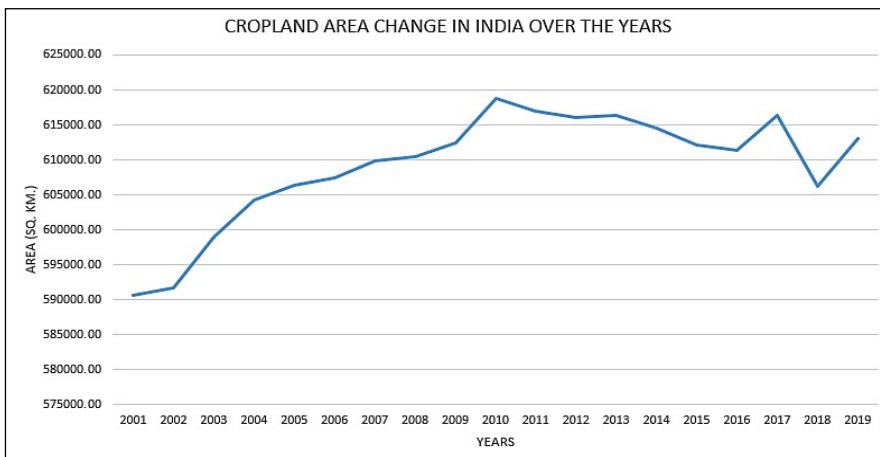


Fig. 6c

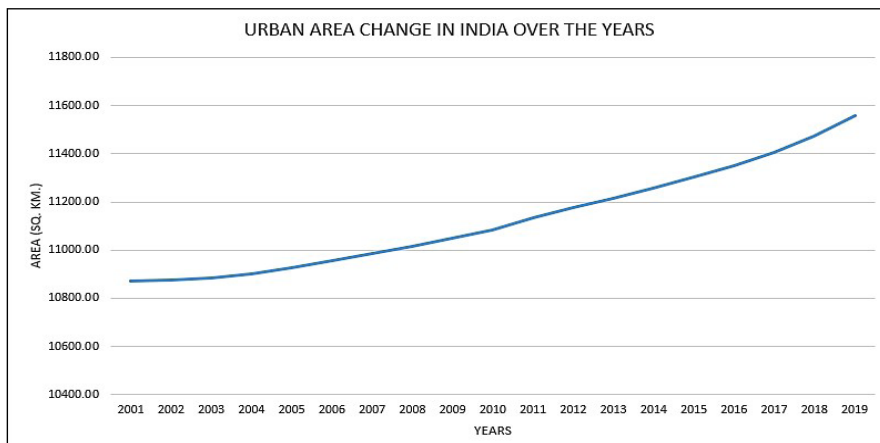


Fig. 6d

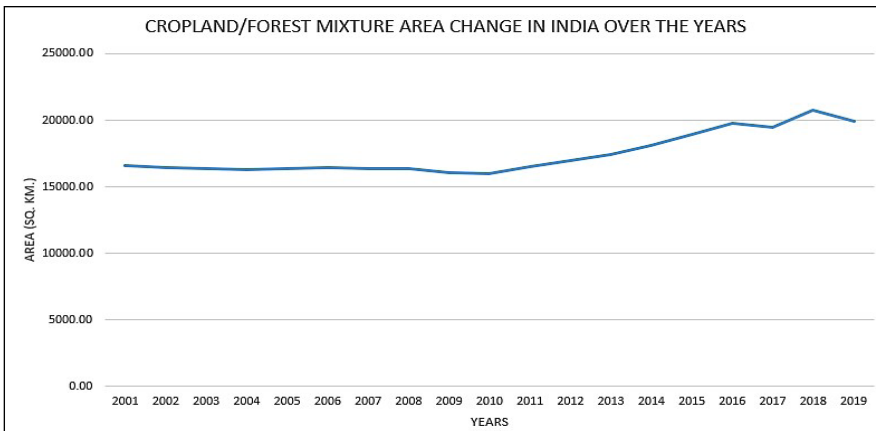


Fig. 6e

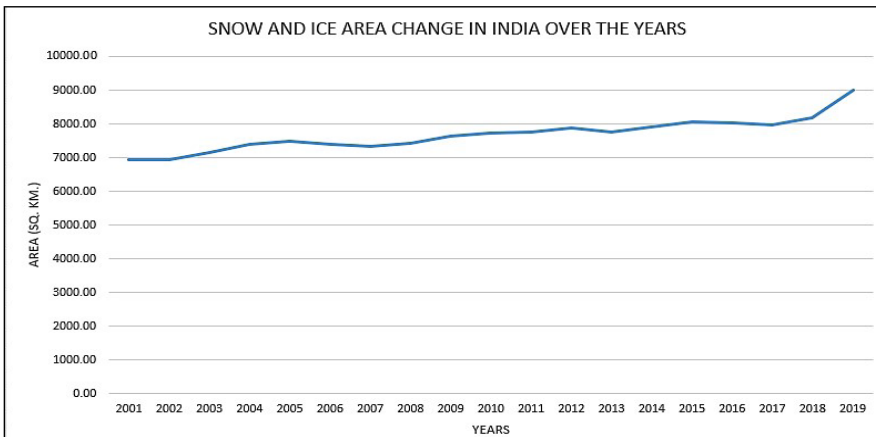


Fig. 6f

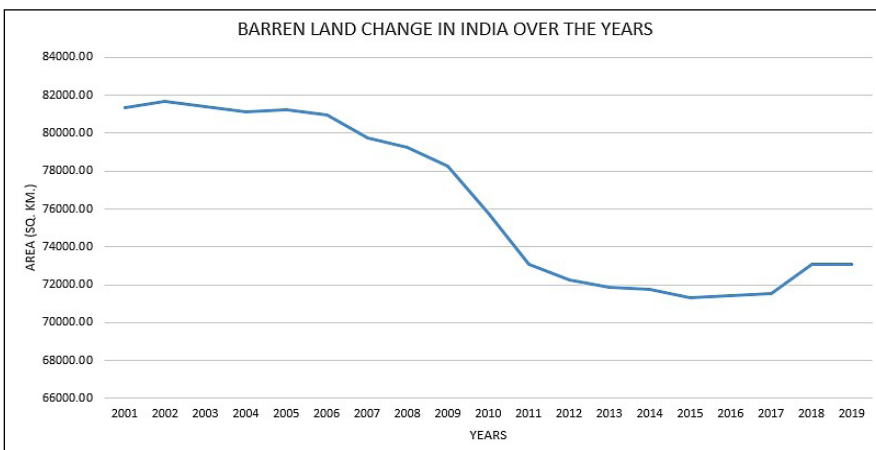


Fig. 6g

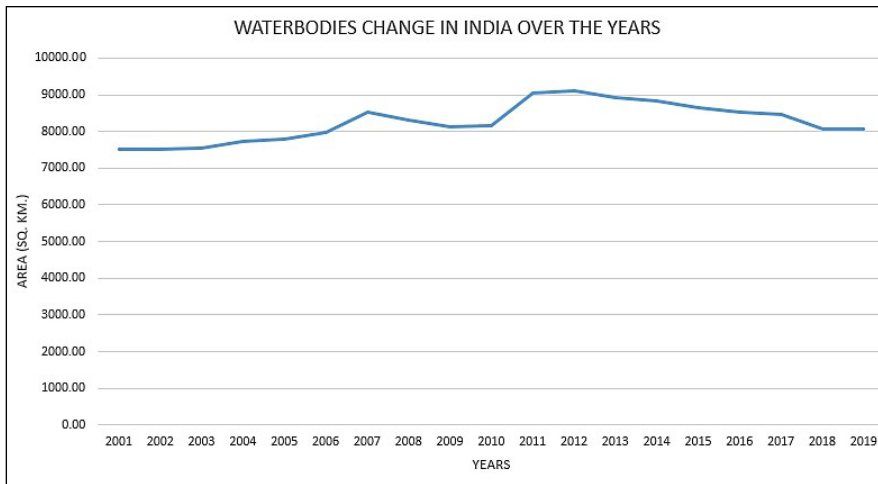


Fig. 6h: Graphs Showing the Change in Area Over the Years

Table 2: Depicting the Area Change and their Absolute Difference Over the Years

LULC (sq. km.)	INITIAL YEAR AREA	FINAL YEAR AREA	ABSOLUTE DIFFERENCE FROM 2001 TO 2019	PERCENTAGE DIFFERENCE
FOREST	86730.88	95063.63	8332.75	9.61%
GRASSLAND	243805.25	213704.50	-30100.75	-12.35%
PERMANENT WETLANDS	2582.88	3503.56	920.69	35.65%
AGRICULTURE	590623.50	613100.25	22476.75	3.81%
URBAN/ BUILTUP LAND	10870.25	11559.56	689.31	6.34%
CROPLAND/ FOREST MIXTURE	16562.56	19900.69	3338.13	20.15%
SNOW AND ICE	6948.50	8994.13	2045.63	29.44%
BARREN LAND	81363.50	73096.56	-8266.94	-10.16%
WATERBODIES	7511.19	8075.63	564.44	7.51%

When the area change of each LULC classes are plotted in a line graph, it is observed that barren land and grassland have a negative trend whereas waterbodies have a linear trend. All the other variables have a positive trend over the years.

After calculating the net change, the percentage differences are calculated for each and every LULC classes. It is observed that area of each and every LULC parameters are changing over the years and the changes are significant. The highest negative percentage change is observed in grassland area (i.e., -12.35%) followed by barren land (-10.16%) whereas the highest positive percentage change is observed in permanent wetlands (35.65%) though area wise permanent wetlands has not changed significantly. Area wise the lowest change is observed in waterbodies and the highest change is observed in agricultural area.

For the next objective and for detecting the physiography change in India, first we have to determine the climatic and other factors on which the change of LULC parameters depend. For this weather parameters like temperature and rainfall are taken into consideration. Also, population has been taken into consideration because anthropologic activities hugely determine the change in LULC of a region.

For establishing the relation between LULC parameters and the independent variables - regression and Pearson correlation test have been applied. From these two tests, we can obtain the level of correlation between these parameters.

**Table 3: Showing the Squared R value Along With the Significance
F-value Derived from the Regression Model**

CORRELATION	INDEPENDENT PARAMETERS	
	R square	Sig F
FOREST	0.67	0.000636
GRASSLAND	0.55	0.008739
PERMANENT WETLANDS	0.9	2.95E-07
AGRICULTURE	0.54	0.010263
URBAN/ BUILT-UP LAND	0.95	1.19E-09
CROPLAND/ FOREST MIXTURE	0.72	0.000341
SNOW AND ICE	0.86	3.01E-06
BARREN LAND	0.86	2.82E-06
WATERBODIES	0.45	0.035272

We observe that the R-square value derived from the regression model depicts that all the LULC variables have significant relation with the weather parameters and the demographic variable. The significance F value of all the parameters have a value less than 0.05, so the regression model is valid and acceptable.

For further analyzing the correlation of the LULC parameters with all the independent variables, Pearson correlation test have been done.

**Table 4: Showing the Pearson Correlation of the LULC Parameters
with the Independent Variables**

PEARSON CORRELATION	RAINFALL	TEMPERATURE	POPULATION
FOREST	0.26	0.07	0.80
GRASSLAND	-0.38	-0.06	-0.74
PERMANENT WETLANDS	0.07	-0.11	0.93
AGRICULTURE	0.38	0.01	0.74
URBAN/ BUILT-UP LAND	0.11	-0.02	0.97

Table 4 (Contd.)...

...Table 4 (Contd.)

CROPLAND/FOREST MIXTURE	-0.05	-0.05	0.81
SNOW AND ICE	0.30	0.00	0.92
BARREN LAND	-0.11	0.12	-0.92
WATERBODIES	0.15	-0.28	0.65

(The boxes with light yellow color depict variables having p-value less than 0.05 and the boxes with dark brown color depicts variables having p-value greater than 0.05)

From the Pearson correlation, we see that agriculture, urban, crop/forest mixture have very strong positive correlation with population i.e., if population increases, these variables will increase. Whereas, barren land and grassland have strong negative correlation with population i.e., they are inversely proportional. Forest, agriculture and waterbodies have positive correlation with rainfall. Forest also has positive correlation with temperature but grassland has negative correlation with temperature.

Pearson correlation have been applied here because LULC change and the weather parameters are inter-related with each other. Climate change affects the LULCC which in turn again affects the climate change.

Visually it can be observed that due to climate change and LULC change, the physiography of India, especially in the north-west part i.e., the state of Rajasthan is changing rapidly over the years. The LULC map of India for the year 2001, 2010 and 2019 are shown in figure 3.

To visualize the future trend of the LULC change along with the change in weather parameters, the Sen's slope has been used. The Sen's slope generates the slope, either positive or negative, of a pixel (cell) over the years and depicts the future trend.

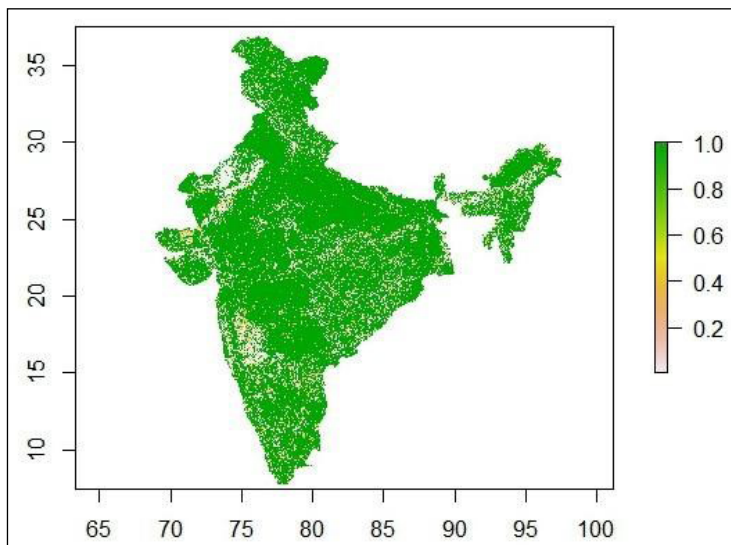


Fig. 7: Future Trend of LULC of India

The future trend using Sen's slope has been calculated for LULC, temperature and precipitation. Here the change has been scaled from 0-1, 0.5-0 indicating decrease and 0.6-1 depicting increase. In the Rajasthan region and the Maharashtra-Karnataka region, we see a significant decrease in grassland area in the near future (Fig 7). In Rajasthan, we also see a decrease in the desert area in the near future whereas in the north-east India, we observe a decrease in the forest area in the near future (Fig 7).

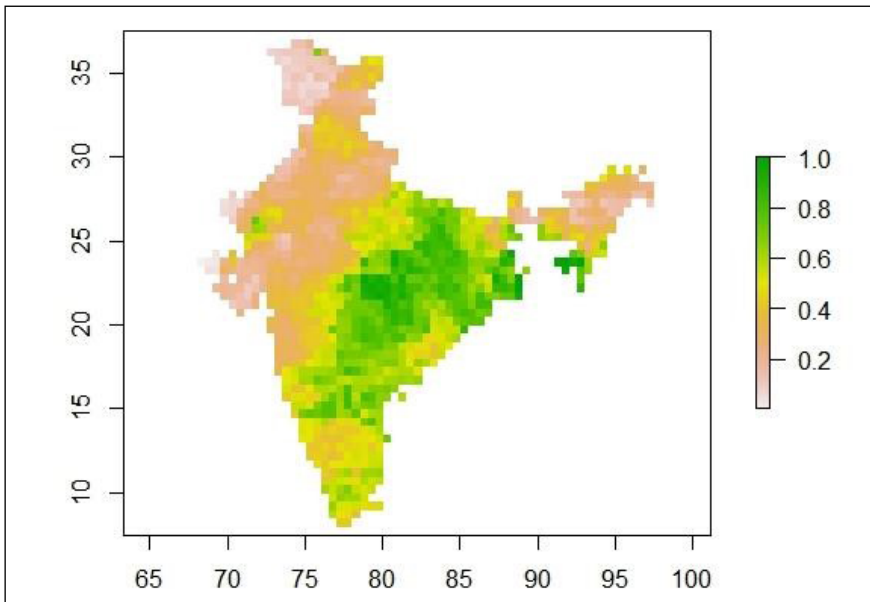


Fig. 8: Future Trend of Temperature in India

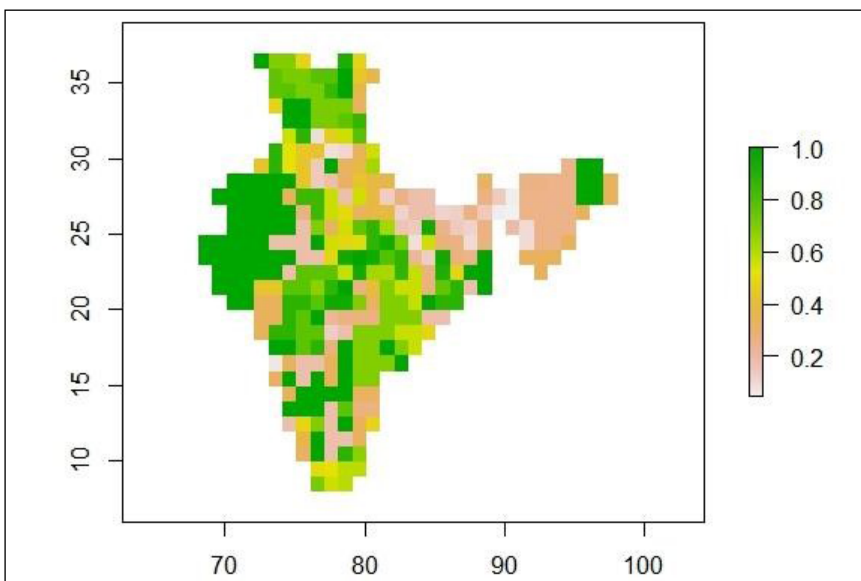


Fig. 9: Future Trend of Rainfall in India

From the future trend of temperature, it is observed that in near future, temperature is decreasing in Rajasthan, which is creating an optimal temperature for the monsoonal winds to turn towards Rajasthan and rainfall to happen there. The slight decrease in temperature is actually pulling the monsoonal winds towards Rajasthan, causing in increased rainfall than usual and decreasing the rainfall in the eastern part of the country. The increase in rainfall is thus enhancing the growth of grassland in the desert region. Again, due to increase in population, the grassland already present there, is being turned into agricultural land due to anthropogenic intervention. So, in the near future, it is observed that the physiography of the region is changing, the desert being converted into grassland and the grassland being converted into agricultural land. So, a gradual shift of grassland is being observed towards the desert along with a decrease in the area of arid zone in Rajasthan. On contrary, in the north-east India, due to decrease in rainfall, the forest cover is going to decrease in the near future. Also, the temperature of the eastern region of the country has started increasing. According to a study by (Gogoi et al., 2019), the mean temperature of Orissa has increased by $\sim 0.3^{\circ}\text{C}$ during the past three decades with the most accelerated warming ($\sim 0.9^{\circ}\text{C}$) occurring during the recent decade (2001 to 2010). The study also shows that 25 to 50% of this observed overall warming is associated with LULC. Further they observe that the spatial pattern of LULC changes matches well with the independently estimated warming associated with LULC suggesting a physical association between them. A study by (Roy & Giriraj, 2008) stated that LULC change is scattered particularly in regions like Western and Eastern Ghats, Himalayas and North-eastern states. In Western Ghats over the past centuries the changes in landscape are mainly due to plantations (tea, coffee, rubber, teak etc.) and some due to anthropogenic pressure where the rate of deforestation in the Western Ghats is estimated to be 0.57% annually during the period 1920-1990 and 0.90% annual decline in natural forest cover in Kerala for the period 1961-1988. Arunachal Pradesh over the past decades has not only resulted in the large-scale loss of forest cover, but has also caused the land cover change, fragmentation of the remaining habitat into numerous isolated patches. From this we can conclude that the physiography of the country is changing with change in LULC and change in various weather parameters and increasing population and this study is well aligned with the existing studies

CONCLUSION

Land use is influenced by economic, cultural, political, historical and land-tenure factors at multiple scales. Land cover, on the other hand, is one of the many biophysical attributes of the land that affect how ecosystems function (Turner et al., 1995). Land use referred to as man's activities and the various uses which are carried on Land. Land cover is referred to as natural vegetation, water bodies, rock/soil, artificial cover and others resulting due to land transformation. Since both land use/land cover are

closely related and are not mutually exclusive they are interchangeable as the former is inferred based on the land cover and on the contextual evidence. From the above study, it is evident that the with change in LULC of the country, the physiography of the country is changing. The LULC variables and the weather parameters and the demographic factors are closely interrelated. Change in one directly impacts the other factors. This study showed that the permanent wetlands have the highest positive percentage change over the years whereas grasslands had the highest negative percentage change. For the future projection, a gradual shift of the grassland present in Rajasthan is observed towards the Thar desert and the subsequent grassland is being encroached by increasing agricultural land.

Now this gradual LULC change in the country can help certain kind of business developments and planning. The government can plan its future projects keeping these studies and points in mind. For the change in LULC and increase in agriculture in Rajasthan, Companies can invest in R&D for development of crops which can sustain in the arid conditions. Companies can also come up with various fertilizers which shall be helpful for the plantation of arid and semi-arid regions. On the contrary, for the growing heat in the eastern portion of the country, companies can focus on the supply of more cooling solutions in these regions. They can also invest various kinds of afforestation services to reduce the impact of LULC and climate change. With the expected expansion of urban landscape and concomitant increase in anthropogenic activities along with changing cropping patterns, LULC linked changes to surface temperature and hence regional climate feedback over India necessitates additional investigations.

REFERENCES

- [1] Ariti, A.T., van Vliet, J., & Verburg, P.H. (2015). Land-use and land-cover changes in the Central Rift Valley of Ethiopia: Assessment of perception and adaptation of stakeholders. *Applied Geography*, 65, 28–37. <https://doi.org/10.1016/j.apgeog.2015.10.002>.
- [2] Garg, V., Nikam, B.R., Thakur, P.K., Aggarwal, S.P., Gupta, P.K., & Srivastav, S.K. (2019). Human-induced land use land cover change and its impact on hydrology. *Hydro Research*, 1, 48–56. <https://doi.org/10.1016/j.hydres.2019.06.001>.
- [3] Gogoi, P.P., Vinoj, V., Swain, D., Roberts, G., Dash, J., & Tripathy, S. (2019). Land use and land cover change effect on surface temperature over Eastern India. *Scientific Reports*, 9(1), 8859. <https://doi.org/10.1038/s41598-019-45213-z>.
- [4] Goswami, B. N., Venugopal, V., Sengupta, D., Madhusoodanan, M. S., & Xavier, P. K. (2006). Increasing trend of extreme rain events over India in a warming environment. *Science*, 314(5804), 1442–1445.
- [5] Hassan, Z., Shabbir, R., Ahmad, S. S., Malik, A. H., Aziz, N., Butt, A., & Erum, S. (2016). Dynamics of land use and land cover change (LULCC) using geospatial techniques: A case study of Islamabad Pakistan. *SpringerPlus*, 5(1), 812. <https://doi.org/10.1186/s40064-016-2414-z>.
- [6] Lambin, E.F. (2016). Modelling and monitoring land-cover change processes in tropical regions: *Progress in Physical Geography*. <https://doi.org/10.1177/030913339702100303>

- [7] Lunetta, R.S., Knight, J.F., Ediriwickrema, J., Lyon, J.G., & Worthy, L.D. (2006). Landcover change detection using multi-temporal MODIS NDVI data. *Remote Sensing of Environment*, 105(2), 142–154. <https://doi.org/10.1016/j.rse.2006.06.018>.
- [8] Roy, P.S., & Giriraj, A. (2008). Land Use and Land Cover Analysis in Indian Context. *Journal of Applied Sciences*, 8(8), 1346–1353. <https://doi.org/10.3923/jas.2008.1346.1353>.
- [9] Saddique, N., Mahmood, T., & Bernhofer, C. (2020). Quantifying the impacts of land use/land cover change on the water balance in the afforested River Basin, Pakistan. *Environmental Earth Sciences*, 79(19), 448. <https://doi.org/10.1007/s12665-020-09206-w>.
- [10] Srivastava, P.K., Han, D., Ramirez, M.R., & Islam, T. (2013). Machine Learning Techniques for Downscaling SMOS Satellite Soil Moisture Using MODIS Land.
- [11] Surface Temperature for Hydrological Application. *Water Resources Management*, 27(8), 3127–3144. <https://doi.org/10.1007/s11269-013-0337-9>.
- [12] Sun, Z., Li, X., Fu, W., Li, Y., & Tang, D. (2013). Long-term effects of land use/land cover change on surface runoff in urban areas of Beijing, China. *Journal of Applied Remote Sensing*, 8(1), 084596. <https://doi.org/10.1117/1.JRS.8.084596>.
- [13] Tahiru, A. A., Doke, D. A., & Baatuwile, B. N. (2020). Effect of land use and land cover changes on water quality in the Nawuni Catchment of the White Volta Basin, Northern Region, Ghana. *Applied Water Science*, 10(8), 198. <https://doi.org/10.1007/s13201-020-01272-6>.
- [14] Teng, S. P., Chen, Y. K., Cheng, K. S., & Lo, H. C. (2008). Hypothesis-test-based landcover change detection using multi-temporal satellite images – A comparative study. *Advances in Space Research*, 41(11), 1744–1754. <https://doi.org/10.1016/j.asr.2007.06.064>.
- [15] Tewabe, D., & Fentahun, T. (2020). Assessing land use and land cover change detection using remote sensing in the Lake Tana Basin, Northwest Ethiopia. *Cogent Environmental Science*, 6(1), 1778998. <https://doi.org/10.1080/23311843.2020.1778998>.
- [16] Turner, B.L., Skole, D., Sanderson, S., Fischer, G., Fresco, L., & Leemans, R. (1995). Landuse and land-cover change: Science/research plan. [No Source Information Available].
- [17] Weng, Q. (2001). A remote sensing?GIS evaluation of urban expansion and its impact on surface temperature in the Zhujiang Delta, China. *International Journal of Remote Sensing*, 22(10), 1999–2014. <https://doi.org/10.1080/713860788>.

Measuring the Differential Effects of Emotional Maturity on Turnover Intention Multiple Regression Analysis

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Abstract: Emotional maturity has been viewed from different facets by scholars. Although the concept of emotional maturity dates back to the 19th century, in the recent years, this construct has received little attention from researchers. Prior studies have attempted to explain the role of emotional maturity in promoting positive outcomes at the workplace. Surprisingly, there are probably limited number of studies that investigate the influence of emotional maturity on negative outcomes. Moreover, these studies have been carried out to investigate the aggregate impact of emotional maturity on employees' behavior. The objective of this study was to examine the differential effects of emotional maturity on negative outcome i.e. turnover intention. There are four dimensions of emotional maturity, namely, emotional adjustment, emotional progression, social adjustment, and personality integration. The relationship of these four dimensions with turnover intention was established depending on the capitalization theory. According to the capitalization theory, the sharing of positive events influences employees' behavior. The researcher viewed these four dimensions as positive events that affect employee behavior, i.e., their turnover intention. Based on the literature, the four hypotheses were framed and tested by using multiple hierarchical regressions. The managers of private sector of service industries working in North Bengal and Sikkim were surveyed. All the dimensions of emotional maturity emerged as significant predictors of turnover intention. The findings of the study present series of recommendation to the managers as well as to the academicians.

INTRODUCTION

Emotional maturity has been viewed from different facets by scholars. Emotional maturity (EM) refers to “the ability of facilitating and guiding emotional tendencies to reach intended goals” (Yusoff, Rahim, Pa, Mey, 2011; p. 294). It is the ability to understand the facts and respond to the situation. An emotionally matured person is output oriented; hence, the individual not only monitors and manages own emotions but also evaluates the state of emotion of others and always has some solution in any situation. He or she has the capacity to make adjustment with other members. Although the concept of EM dates back to the 19th century, in the recent years, this construct has received little attention from researchers. Limited number of studies

have focused on this important construct (Nehra & Rangnekar, 2017; Nicholls *et al.*, 2015; Nehra & Rangnekar, 2018), thus motivating researcher to carry out investigation on this specific construct.

Prior studies have attempted to explain the role of EM in promoting positive outcomes at the workplace (Hyatt *et al.*, 2007; Landau & Weissler, 1998; Avkiran, 2000; Klever, 2009). Surprisingly, there are probably limited number of studies that investigate the influence of EM on negative outcomes.. Moreover, these studies have been carried out to investigate the aggregate impact of EM on employees' behavior. However, there is paucity of research that investigates the impact of the different dimensions of EM on employee's negative behavior (Nehra & Rangnekar, 2018). In the recent years, the retention of employees has become the goal of many employers. Although the intention to quit does not necessarily mean the actual behavior, the study of Tett and Meyer (1993) indicated that turnover intention is the strongest predictor of the turnover behavior than other predictors such as satisfaction and commitment. Employee turnover is one of the biggest concerns in Indian industries. In 2017, KPMG conducted a survey in India, and the report focused on employee turnover across different industries, which showed that retail is the highest contributor, i.e., 20.4%, followed by media 18.5% and financial services 17.4%. Employee turnover intention is defined as "a conscious and deliberate willingness to leave the organization" (Tett & Meyer, 1993, p. 262).

Griffeth *et al.* (2000) identified the variables that influence employee turnover. There are three primary reasons that contribute to turnover, namely, personal reasons, better career opportunities, and pay. The aim of this study is to know the role of EM in reducing turnover intention among the employees. The current study attempts to fill this gap by investigating how the different dimensions of EM influences negative outcomes, i.e., the turnover intention among the employees at the workplace.

Previous studies on EM have been mainly conducted in the US and Europe (Nicholls *et al.*, 2015; Dean, 1966; Stump, 1939), and very few studies are based on the Indian context (Nehra & Rangnekar, 2017; Pastey & Aminbhavi, 2006). In 1872, Darwin identified the relationship between emotion and culture while observing that emotions and expression of emotions are universal. Culture has profound influence on emotions and refers to a set of artifacts, values, ideas, and symbols that are held by members, which differentiate them from others. Culture varies from region to region; for instance, Europeans and Americans are individualistic in nature (Hofstede, 1983), whereas countries like India are collectivist in nature (Hofstede, 1980). In the collectivist culture, family and work group goals are emphasized over individual goals, whereas in the individualistic culture, the importance is given to personal achievement irrespective of group's expenses. Individualistic country like America is more likely to display negative emotion in the presence of others as well as when they are alone, but

a country like Japan where both the individualistic and collectivist cultures coincide, it is more likely that the country displays negative emotions when they are alone (Matsumoto, 1990). It is evident from the research that emotions are affected by the culture where they belong. The current study helps us to understand how emotional reactions of Asian country like India differ from Europe and America. Therefore, it is necessary to examine Indian managers with respect to their emotions. Thus, the study is conducted among the managers of private sector organization in India.

Furthermore, numerous studies on capitalization highlight the ways in which sharing of positive events affects employee behavior (Ilies *et al.*, 2010; Gable & Reis, 2010; Conoley *et al.*, 2015). The findings of these studies have revealed that the sharing of positive events significantly affect employee's behavior. However, none of the capitalization studies seeks to establish the relationship between sharing of positive events and negative output among individuals at the workplace Gable *et al.*, (2004). In this context, the Capitalization theory is suitable for identifying the relationship between EM and turnover intention. This underlying theory may explain how the sharing of positive events reduces turnover intention of the employees.

LITERATURE REVIEW

CONCEPTUAL FRAMEWORK

The conceptual framework is based on the “Capitalization theory”, which was propounded by Langston in 1994. Capitalizing on positive events has been identified as a prominent psychological process that helps in adjusting mental health. This theory assumes that the sharing of positive events in the workplace influences employees' behavior. Some of the studies have postulated that the sharing of positive events influences our behavior in the day-to-day life (Reis *et al.*, 2010; Grandey *et al.*, 2002; Gable *et al.*, 2006).

Positive life events occurring in our life adversely affect stress and other employees' behavior Brown & McGill, (1989). Lewinsohn and Libet, (1972) and Lewinsohn and Graf (1973) used daily diaries of commonplace positive events to see their impact on depression within subjects over time. Their findings revealed that the occurrence of positive events reduces depression within a day of its occurrence. The Capitalization theory is suitable for identifying the relationship between EM and turnover intention, which means that the sharing of positive events makes people committed to the organization where they are working and reduces turnover intention among the employees, which is detrimental to the organization.

Based on the “Capitalization” mechanism, this study measures the differential effects of EM on turnover intention. The conceptual framework for the study is presented in Figure 1.

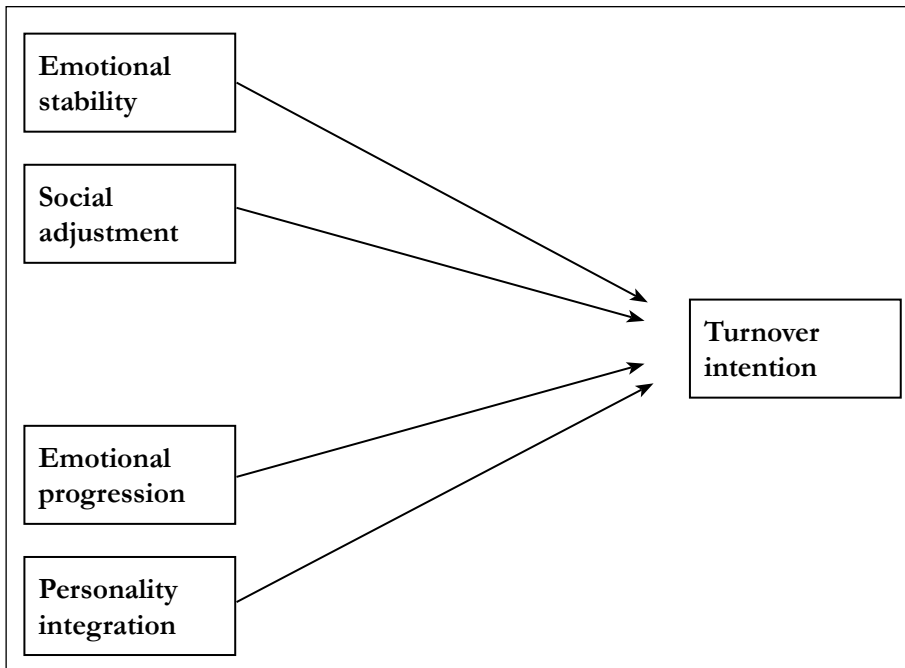


Fig. 1: Conceptual Framework

HYPOTHESES DEVELOPMENT

Emotional Stability and Turnover Intention

Emotional stability refers to the ability of an individual to keep himself or herself calm under pressure or stress (Bhagat *et al.*, 2015). Capitalization is a process of sharing positive events, which in turn influences employee behavior. The researcher views emotional stability as a positive event, which is associated with turnover intention through the capitalization approach. Carstensen *et al.*, (2000) asserted that emotional stability helps individuals in regulating their emotions. Emotional stability induces positive emotions and builds inter-personal relationship (Judge *et al.*, 1997). Emotional stability appears to influence turnover intention, as it helps individuals to regulate their emotions under different circumstances. Rogosch and Cicchetti (2004) suggested that emotional stability helps individual in regulating emotions and also in coping with life challenges. Individuals who possess this attribute are less worried and have the tendency to patiently deal with all the circumstances (Ang *et al.*, 2006). Based on the literature, it can be hypothesized that

H1: Emotional stability negatively influences turnover intention.

Social Adjustment and Turnover Intention

Social adjustment refers to an individual who shows contentment, flexibility, and adaptability while living with others (Wright, 1942). The subjective and objective are

the two aspects of social adjustment. Objective refers to harmonious living while subjective refers to contentment while living with others. The findings of the prior studies revealed that social adjustment influences employee behavior (Collins and Miller, 1994; Ignatius and Kokkonen, 2007). Based on the capitalization approach, some scholars have viewed social adjustment as a positive event, which has influenced employee behavior consequently (Nehra & Rangnekar, 2017; Rogers, 1961). With regard to the prior studies, we viewed emotional stability as a positive event, which is associated with turnover intention through the capitalization approach. Hence, the following hypothesis is made

H2: Social adjustment negatively influences turnover intention.

Emotional Progression and Turnover Intention

Emotional progression is defined “as an emotional advancement and vitality with respect to the environment, which represents positive thinking imbued with righteousness and contentment” (Singh & Bhargava, 1990). High self-esteem, better decision-making ability, and self-regulation are attributes of emotional progression (Singh & Bhargava, 1990). Some scholars have asserted that emotional progression builds positive behavior; for instance, self-concept, self-confidence, self-disclosure (Loosemore & Lam, 2004; Posey *et al.*, 2010). On the basis of capitalization theory, it can be stated that emotional progression is a positive event and sharing of this event leads to change in behavior of employees. Depending on the above discussion, it can be hypothesized that

H3: Emotional progression negatively influences turnover intention.

Personality Integration and Turnover Intention

The concept of personality integration came into picture in 1959 and was defined as “an approach for understanding effective behavior and optimal adjustment” (Seeman, 1959). Personality integration helps an individual to perceive the environment and people around him or her in optimistic rather than pessimistic way (Nehra, 2018). Odom *et al.* (1971) reported that children having personality integration are more task-oriented. Self-accountability, self-esteem, positive self-concept, freedom to express, and self-organized are the attributes of personality integration (Cooley & Seeman, 1979). Robins *et al.*, (2001) reported that individuals having positive self-concepts and high self-esteem find many desirable personality traits. In the current study, personality integration is treated as positive event and sharing of it has impact on employee behavior. On the basis of this, the capitalization theory is introduced to identify the relationship between personality progression and turnover intention. Hence, it can be hypothesized that

H4: Personality integration negatively influences turnover intention.

RESEARCH METHODOLOGY

SAMPLE DESIGN AND SAMPLE COLLECTION

A sample of 243 was collected from North Bengal and Sikkim. The managers of private sector of service industries were surveyed. A convenience sampling technique was used to collect data, which was collected through field visit and mailing of questionnaire. To get the responses, permission was sought from the incharge of a specific branch. The topic and objective of the study was made clear to the in-charge. The preexisting scales were used to collect responses from the respondents. All the dimensions of EM were measured using the scale presented by Singh and Bhargava (1990). The dimensions of EM scale included emotional stability, social adjustment, emotional progression, and personality integration; these dimensions were measured with the help of separate 10 items. Turnover intention was measured using the scale developed by Babin and Boles (1995). Two items were used to measure turnover intention, and each item was measured on a scale varying from 5 = “strongly agree” to 1 = “strongly disagree”. A pilot study was conducted with the help of 53 respondents to see the feasibility of items measuring the constructs. The Cronbach alpha of all constructs is above the acceptable level, i.e., 0.7 (Hair *et al.*, 2010), and the results of pilot study is demonstrated in Table 1. All the items were used for further analysis. Table 1

Table 1

S.No	Constructs	Cronbach alpha
1.	Emotional stability	0.815
2.	Emotional progression	0.888
3.	Personal integration	0.817
4.	Social adjustment	0.888
5.	Turnover intention	0.875

DATA ANALYSIS

CHARACTERISTICS OF RESPONDENTS

Table 2: Demographic Characteristics of Samples

Characteristics	Number of samples	Percentage (%)
Gender		
Male	174	71.6
Female	69	28.4
Age		
20-29	145	59.6
30-39	84	34.56

Table 2 (Contd.)...

...Table 2 (Contd.)

40-49	11	0.45
50-59	3	0.12
Managerial Level		
Lower	98	40.4
Middle	116	47.7
Top	29	11.9
Experience		
0-5 years	159	65.5
6-10 years	51	20.9
11-15 years	25	10.3
More than 15 years	8	3.3

OUTLIERS, MISSING DATA AND NORMALITY OF DATA

The Mahalanobis D2 statistic was used to detect any outlier. An outlier is an element in dataset, which deviates significantly from the rest of data in dataset. The multivariate outliers are checked using two or more independent variables.

Table 3: Descriptive Statistics and Correlation

S.No	Variables	Mean	Std. Deviation	1	2	3	4	5	6	7	8
1	Age	1.45	0.64								
2	Gender	1.28	0.45	-0.258**							
3	Experience	1.50	0.80	0.650**	-0.252						
4	Level	1.70	0.68	0.483**	-0.151	-0.495**					
5	Emotional stability	2.46	0.73	-0.109	-0.072	-0.051**	-0.158*				
6	Emotional progression	2.34	0.78	-0.153*	-0.091	-0.077	-0.131*	0.766**			
7	Social adjustment	2.40	0.75	-0.118	-0.165**	-0.051**	-0.159**	0.708	0.802*		
8	Personal integration	2.23	0.83	-0.228**	-0.090	-0.136**	-0.176*	0.752	0.823	0.803*	
9	Turnover intention	2.39	1.14	-0.183**	-0.057**	-0.151	-0.208**	0.517**	0.535**	0.515*	0.552**

Correlation is significant at $p^* < 0.05$ and at $p^{**} < 0.01$

The outliers are associated with D; the threshold value should be 0.001 or less and follow the Chi-square distribution with degrees of freedom equal to the number of variables

included in the study. In this research, ten cases were detected as outlier and removed from further analysis. About 52 respondents did not answer at least one question, and so these missing values were replaced by Expected Maximization method. The Expected Maximization method is an effective method to manage missing data (Schafer & Olsen, 1998). This technique overcomes the limitation of other techniques such as regression substitution and mean substitution. These aforementioned techniques underestimate the standard error and generate biased estimates. One of the methods to test normality is to monitor skewness and kurtosis, and the values lie between -2 and +2, which is acceptable George & Mallery, (2003). The values of skewness and kurtosis are found between -2 and +2 in the analysis, thus indicating normality. Table 3 demonstrates the descriptive statistics of dependent variable (Turnover intention), independent variables (Emotional stability, Emotional progression, Social adjustment, and Personal integration), and control variables (age, gender, work experience and managerial level). The correlation between dependent variable (Turnover intention), independent variables (Emotional stability, Emotional progression, Social adjustment, and Personal integration) was 0.803, 0.535, 0.515, and 0.552; and the highest correlation was found between Turnover intention and Emotional stability. Multicollinearity was also checked by using two parameters Tolerance and Variance Inflation Factor. The values of Tolerance should not be <0.2 and Variance Inflation Factor should be >10 (Hair et al., 2010). This dataset was found to be free from multicollinearity because both the values met the criterion as presented in Table 4.

Table 4: Test of Multicollinearity

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
Variables	0.188	0.230		0.817	0.415		
Emotional Stability	0.281	0.141	0.179	1.998	0.047	0.357	2.802
Emotional Progression	0.172	0.161	0.118	1.070	0.286	0.237	4.225
Social Adjustment	0.167	0.153	0.110	1.089	0.278	0.283	3.532
Personal Integration	0.316	0.149	0.230	2.121	0.035	0.245	4.081

Dependent Variable: Turnover Intention

The researcher applied a multiple hierarchical regression analysis to test the four hypotheses. The existence and strength of relationship was depicted through the change in adjusted R^2 and the level of significance. Table 5 demonstrates the results of first hypothesis that emotional stability influences turnover intention. In the first step, the control variables, i.e., age gender, experience, and managerial level were

taken for analysis. The adjusted R^2 in the analysis was 0.049, thus explaining 4.9% of the total variance in turnover intention. In this step, managerial level emerged as significant factor. The beta co-efficient of managerial level was -0.154, which indicated the negative association with turnover intention. In the second step, emotional stability was considered, and the variance explained was 23.5% of the total variance in turnover intention. It was observed that emotional stability emerged as a significant factor, thereby supporting the first hypothesis, i.e., there is significant relationship between emotional stability and turnover intention. The beta co-efficient of emotional stability was -0.495, which indicated the negative association with turnover intention.

Table 5: Results of Hierarchical Regression Analysis for H1

Model	Variable	Adjusted R^2	R^2 Change	F Change	Unstandardized coefficients beta	Standardized coefficients beta	t
1	Step 1	0.049	.065*	3.978*			
	Age				-0.216	-0.123	-1.406
	Gender				-0.297	-0.118	-1.769
	Experience				-0.034	-0.024	-.276
	Managerial Level				-0.259	-0.154	-2.037**
2	Step 2						
	Age	0.284	0.235**	76.41**	-0.120	-0.068	-0.895
	Gender				-0.163	-0.065	-1.113
	Experience				-0.081	-0.057	-0.750
	Managerial level				-0.133	-0.079	-1.198
	Emotional stability				-0.775	-0.495	8.742**

Significant at ** $p < 0.01$ and * $p < 0.05$

We applied the same hierarchical regression analysis to test H2; and the result is presented in Table 6. The first step was similar to that of the previous analysis, but in the second step, emotional progression was considered. The adjusted R^2 was 0.294, thus explaining 29.4% of the total variance in turnover intention. In this step, emotional progression emerged as the significant factor, thereby supporting the second hypothesis, i.e., there is significant relationship between emotional stability and turnover intention. The beta co-efficient of emotional progression was -0.506, which indicated negative association with turnover intention.

Table 6: Results of Hierarchical Regression Analysis for H2

Model Variable		Adjusted R ²	R ² Change	F Change	Unstandardized coefficients beta	Standardized coefficients beta	t
1	Step 1	0.049	0.065*	3.978*			
	Step 2	0.294	0.244**	80.61**			
	Age				-0.062	-0.035	-0.461
	Gender				-0.121	-0.048	-0.829
	Experience				-0.067	-0.047	-0.624
2	Managerial level				-0.182	-0.108	-1.652
	Emotional progression				-0.739	-0.506	8.978**

Significant at ** $p < 0.01$ and * $p < 0.05$

We again applied the hierarchical regression analysis to test H3; and the result is presented in Table 7. The third hypothesis was that social adjustment influences turnover intention. The first step was similar to that of the previous analysis, but in the second step, we considered social adjustment. The adjusted R² was 0.292, thus explaining 29.2% of total variance in the turnover intention. In this step, social adjustment emerged as the significant factor, thereby supporting the third hypothesis. In this analysis, we found negative association between social adjustment and turnover intention, and the beta coefficient was -0.495

Table 7: Results of Hierarchical Regression Analysis for H3

Model Variable		Adjusted R ²	R ² Change	F Change	Unstandardized coefficients beta	Standardized coefficients beta	t
1	Step 1	0.049	0.065*	3.978*			
	Step 2	0.292	0.276**	73.00**			
	Age				-0.101	-0.057	-0.750
	Gender				-0.037	-0.015	-0.250
	Experience				-0.077	-0.054	-0.709
2	Managerial level				-0.127	-0.075	-1.130
	Emotional progression				-0.752	-0.495	8.549**

Significant at ** $p < 0.01$ and * $p < 0.05$

To test the last hypothesis, i.e., personality integration influences turnover intention. We conducted the same hierarchal regression analysis; the result is presented in Table 8. The first step was similar to that of the previous analysis, but in the second step, we considered personality integration. The adjusted R^2 was ⁰0.303, thus explaining 30.3% of total variance in turnover intention. In this step, personality integration emerged as a significant factor, thereby supporting the last hypothesis. The beta coefficient was -0.526, which indicated the negative relationship between personal integration and turnover intention.

Table 8: Results of Hierarchical Regression Analysis for H3

Model	Variable	Adjusted R^2	R^2 Change	F Change	Unstandardized coefficients beta	Standardized coefficients beta	t
1	Step 1	0.049	0.065*	3.978*			
	Step 2	0.303	0.318**	73.00**			
	Age				0.005	0.003	0.041
	Gender				-0.085	-0.034	-0.582
	Experience				-0.058	-0.047	-0.624
2	Managerial level				-0.182	-0.041	-0.544
	Emotional progression				-0.721	-0.526	9.204**

Significant at ** $p < 0.01$ and * $p < 0.05$

DISCUSSION

The objective of this study was to examine the differential effects of EM on turnover intention. There are four dimensions of EM, namely, emotional adjustment, emotional progression, social adjustment, and personality integration. The relationship of these four dimensions with turnover intention was established depending on the capitalization theory. According to the capitalization theory, the sharing of positive events influences employees' behavior. The researcher viewed these four dimensions as positive events that affect employee behavior, i.e., their turnover intention. Based on the literature, the four hypotheses were framed and tested by using multiple hierarchical regressions. The first hypothesis stated that emotional stability influences turnover intention, and the results obtained showed significant negative relationship between these two constructs. The researcher considered emotional stability as a positive event, as it helps individuals in regulating their emotions that encourage them to face challenges in life (Rogosch and Cicchetti, 2004). Individuals with high degree of emotional stability have the tendency of patiently dealing with all the circumstances (Ang et al., 2006). In this regard, the findings indicated that the sharing of positive events, i.e., emotional

stability helps an individual in handling all circumstances and reduces their turnover intention.

The second hypothesis stated that social adjustment influences turnover intention, and the results indicated significant negative association between social adjustment and turnover intention. We considered social adjustment as a positive event. The finding of the study is in line with the capitalization theory, which states that the sharing of positive event affects employees' behavior. Social adjusted individuals are contented and so can adjust anywhere and in any kind of situation hence they can live harmoniously. The finding revealed that social adjustment reduces turnover intention of the employees.

The third hypothesis stated that emotional progression influences turnover intention, and the result indicated significant relationship between them. Emotional progression is considered as a positive event; hence, sharing of this event leads to change in behavior of employees. Emotional progression builds positive behavior among the individuals (Loosemore and Lam, 2004; Posey *et al.*, 2010) and may reduce their negative behavior. The findings revealed that emotional progression reduces turnover intention of the employees.

The last hypothesis stated that personality integration influences turnover intention. The relationship was tested and found significant. We considered personality integration as a positive event; hence, sharing of this event leads to change in behavior of employees. Personality integration induces individuals to display positive traits in their workplace (Robins *et al.*, 2001). These individuals are optimistic about the people and environment around them; hence, they eliminate their sense of negativity (Nehra, 2018). The finding indicated that personality integration reduces turnover intention of the employees.

CONCLUSION

THEORETICAL CONTRIBUTION

The study has presented different series of theoretical contribution. Firstly, very few studies have been conducted in relation to EM though it is an important construct (Nehra & Rangnekar, 2017; Nicholls *et al.*, 2015; Nehra and Rangnekar, 2018). This gap has been bridged in this study, wherein we measured the effects of EM on employee behavior and observed that EM is associated with turnover intention. Secondly, prior studies have addressed the influence of EM on positive behavior of the employees in workplace, whereas this study has attempted to see the role of EM on influencing negative behavior. Thirdly, numerous studies on capitalization have focused on how the sharing of positive events affects employee behavior (Ilies *et al.*, 2010; Gable & Reis, 2010; Conoley *et al.*, 2015). However, none of these studies have attempted to establish

the relationship between EM and turnover intention, which has been explained in this study by using the capitalization theory. Fourthly, prior researches are mainly conducted in the western context (Nicholls *et al.*, 2015; Dean, 1966; Stump, 1939) and there is scarcity of studies in the Indian context, which has motivated the researcher to cover this gap. The study has been carried out among the Indian managers working in the private sector (service industries) of North Bengal and Sikkim.

PRACTICAL CONTRIBUTION

The findings of the study present series of recommendation for the managers. As we know employee turnover is one the biggest concern especially for private organization. Organization spends huge funds on human resource for their recruitment, training, and development as well as for other issues associated with human resource management practices. In case the current employees leave the organization, it will result in wastage of organization resources. This study has confirmed that EM reduces turnover intention of the employees and suggested that organization needs to study the different aspects of EM, i.e., emotional stability, emotional progression, personality integration, and social adjustment. Organization must attempt to strengthen these aspects of EM, which in turn will help the organization to retain huge number of employees having the intension of leaving in future.

This study also helps organization to enhance their effectiveness through their employees. Organization whose turnover is low can make their employees cognitively and emotionally connected to the organization. Thus, employees will develop a sense of belongingness in their workplace and may fully contribute toward their work. If employees continue to offer their services to the organization for long period, then he or she may utilize the organization resources effectively and efficiently.

The current study has attempted to see the relationship between EM and turnover intention. The findings have confirmed that EM reduces turnover intention of the employees. Managers are suggested to conduct training program, management games, counseling, and workshop to strengthen EM.

The study has attempted to cover the underlying gaps, but due to lack of time and resources, some of the areas in this domain remain unstudied, which provides future avenues to the researchers. India is a diversified country; hence, people living in India belong to different religion, caste, creed, and traditions. Culture is not the same throughout the entire country; rather, it varies from place to place. The data was collected from North Bengal and Sikkim because people in these regions follow similar culture. The findings of this study cannot be generalized in other parts of India owing to the cultural differences, which provide opportunities to researchers to conduct study in other parts of the country. Future studies need to establish the relationship between EM and negative behavior, as earlier studies have probably established the relationship between EM and positive behavior. Furthermore, with the

application of the capitalization theory to explain the relationship between EM and negative behavior, researchers can conduct future studies.

REFERENCES

- [1] Ang, S., Van Dyne, L., & Koh, C. (2006). Personality correlates of the four-factor model of cultural intelligence. *Group & Organization Management*, 31(1), 100–123.
- [2] Avkiran, N. (2000). Interpersonal skills and emotional maturity influence entrepreneurial style of bank managers. *Personnel Review*, 29(5), 654–675.
- [3] Babin, B. J., & Boles, J. S. (1998). Employee behavior in a service environment: A model and test of potential differences between men and women. *Journal of Marketing*, 62(2), 77–91.
- [4] Bhagat, V., Simbak, N. B., & Haque, M. (2015). Impact of emotional stability of working men in their social adjustment of Mangalore, Karnataka, India. *National Journal of Physiology, Pharmacy and Pharmacology*, 5(5), 407-410.
- [5] Brown, J.D., & McGill, K.L. (1989). The cost of good fortune: When positive life events produce negative health consequences. *Journal of Personality and Social Psychology*, 57(6), 1103.
- [6] Carstensen, L.L., Pasupathi, M., Mayr, U., & Nesselroade, J.R. (2000). Emotional experience in everyday life across the adult life span. *Journal of Personality and Social Psychology*, 79(4), 644.
- [7] Collins, N.L., & Miller, L.C. (1994). Self-disclosure and liking: a meta-analytic review. *Psychological Bulletin*, 116(3), 457.
- [8] Conoley, C.W., Vasquez, E., Bello, B.D.C., Oromendia, M.F., & Jeske, D.R. (2015). Celebrating the accomplishments of others: Mutual benefits of capitalization. *The Counseling Psychologist*, 43(5), 734-751.
- [9] Cooley, R.S., & Seeman, J. (1979). Personality integration and social schemata 1. *Journal of Personality*, 47(2), 288–304.
- [10] Dean, D.G. (1966). Emotional maturity and marital adjustment. *Journal of Marriage and the Family*, 454-457.
- [11] Gable, J., Braig, J., Witte, K., Wechsler, M., Zheng, P., & Keenan, R. (2006). U.S. Patent Application No. 11/314,748.
- [12] Gable, S.L., & Reis, H.T. (2010). Good news! Capitalizing on positive events in an interpersonal context. In *Advances in Experimental Social Psychology* (Vol. 42, pp. 195-257). Academic Press.
- [13] Gable, S.L., Reis, H.T., Impett, E.A., & Asher, E.R. (2004). What do you do when things go right? The intrapersonal and interpersonal benefits of sharing positive events. *Journal of Personality and Social Psychology*, 87(2), 228.
- [14] Grandey, A.A., Tam, A.P., & Brauburger, A.L. (2002). Affective states and traits in the workplace: Diary and survey data from young workers. *Motivation and Emotion*, 26(1), 31–55.
- [15] Griffeth RW, Hom PW, Gaertner S. (2001). A meta-analysis of antecedents and correlates of employee turnover: Update, moderator tests, and research implications for the next millennium. *Journal of Management*, 26, 463– 488.
- [16] Hair, J.F., Anderson, R.E., Tatham, R.L., & William, C. Black.(2010). *Multivariate Data Analysis*.
- [17] Hofstede, G. (1980). Culture and organizations. *International Studies of Management & Organization*, 10(4), 15–41.
- [18] Hyatt, L., Hyatt, B., & Hyatt, J. (2007). Effective leadership through emotional maturity. *Academic Leadership: The Online Journal*, 5(2), 4.

- [19] Ignatius, E., & Kokkonen, M. (2007). Factors contributing to verbal self-disclosure. *Nordic Psychology*, 59(4), 362–391.
- [20] Ilies, R., Keeney, J., & Scott, B.A. (2010). Work–family interpersonal capitalization: Sharing positive work events at home. *Organizational Behavior and Human Decision Processes*, 114(2), 115–126.
- [21] Judge, T.A., Erez, A., & Bono, J.E. (1998). The power of being positive: The relation between positive self-concept and job performance. *Human Performance*, 11(2-3), 167–187.
- [22] Klever, P. (2009). Goal direction and effectiveness, emotional maturity, and nuclear family functioning. *Journal of Marital and Family Therapy*, 35(3), 308–324.
- [23] Landau, E., & Weissler, K. (1998). The relationship between emotional maturity, intelligence and creativity in gifted children. *Gifted Education International*, 13(2), 100–105.
- [24] Langston, C.A. (1994). Capitalizing on and coping with daily-life events: Expressive responses to positive events. *Journal of Personality and Social Psychology*, 67(6), 1112.
- [25] Lewinsohn, P.M., & Graf, M. (1973). Pleasant activities and depression. *Journal of Consulting and Clinical Psychology*, 41(2), 261.
- [26] Lewinsohn, P.M., & Libet, J. (1972). Pleasant events, activity schedules, and depressions. *Journal of Abnormal Psychology*, 79(3), 291.
- [27] Loosemore, M. and Lam, A.S.Y., 2004. The locus of control: a determinant of opportunistic behaviour in construction health and safety. *Construction Management and Economics*, 22 (4), 385–394.10
- [28] Mallery, P., & George, D. (2003). SPSS for Windows step by step: a simple guide and reference. *Allyn, Bacon, Boston*,
- [29] Matsumoto, D. (1990). Cultural similarities and differences in display rules. *Motivation and Emotion*, 14(3), 195–214.
- [30] Nehra, N.S. (2018). Does locus of control mediate the relationship between personality integration and self-disclosure?. In *Harnessing Human Capital Analytics for Competitive Advantage* (pp. 245264). IGI Global.
- [31] Nehra, N.S., & Rangnekar, S. (2017). Relationship understanding between emotional stability, self-disclosure and social adjustment. *Journal of Intercultural Communication Research*, 46(6), 558–578.
- [32] Nehra, N.S., & Rangnekar, S. (2018). Linking the emotional maturity factors and self-disclosure: a study of Indian organizations. *International Journal of Organizational Analysis*, 26(2), 255–281.
- [33] Nicholls, A.R., Levy, A.R., & Perry, J.L. (2015). Emotional maturity, dispositional coping, and coping effectiveness among adolescent athletes. *Psychology of Sport and Exercise*, 17, 32–39.
- [34] Odom, L., Seeman, J., & Newbrough, J.R. (1971). A study of family communication patterns and personality integration in children. *Child Psychiatry and Human Development*, 1(4), 275–285.
- [35] Pастey, G S., & Aminbhavi, V. (2006). Impact of emotional maturity on stress and self confidence of adolescents. *Journal of the Indian Academy of Applied Psychology*, 32(1), 66–70.
- [36] Posey, C., Lowry, P.B., Roberts, T.L., & Ellis, T.S. (2010). Proposing the online community self-disclosure model: The case of working professionals in France and the U.K. who use online communities. *European Journal of Information Systems*, 19, 181–195.
- [37] Reis, H.T., Smith, S.M., Carmichael, C.L., Caprariello, P.A., Tsai, F.F., Rodrigues, A., & Maniaci, M.R. (2010). Are you happy for me? How sharing positive events with others provides personal and interpersonal benefits. *Journal of personality and social psychology*, 99(2), 311.
- [38] Robins, R.W., Fraley, R.C., Roberts, B.W., & Trzesniewski, K.H. (2001). A longitudinal study of personality change in young adulthood. *Journal of Personality*, 69, 617–640.

- [39] Robins, R.W., Tracy, J.L., Trzesniewski, K., Potter, J., & Gosling, S.D. (2001). Personality correlates of self-esteem. *Journal of Research in Personality*, 35(4), 463–482.
- [40] Rogers, C.R. (1961). On becoming a person atherapists view of psychotherapy. Boston: Houghton Mifflin.
- [41] Rogosch, F.A., & Cicchetti, D. (2004). Child maltreatment and emergent personality organization:
- [42] Perspectives from the five-factor model. *Journal of Abnormal Child Psychology*, 32(2), 123–145.
- [43] Schafer, J.L., & Olsen, M.K. (1998). Multiple imputation for multivariate missing-data problems:
- [44] A data analyst's perspective. *Multivariate Behavioral Research*, 33(4), 545–571.
- [45] Seeman, J. (1959). Toward a concept of personality integration. *American Psychologist*, 14(10), 633.
- [46] Singh, Y., & Bhargava, M. (1990). Manual for emotional maturity scale. Agra: National Psychological Corporation.
- [47] Stump, N.F. (1939). Sense of humor and its relationship to personality, scholastic aptitude, emotional maturity, height, and weight. *The Journal of General Psychology*, 20(1), 25–32.
- [48] Tett, R.P., & Meyer, J.P. (1993). Job satisfaction, organizational commitment, turnover intention, and turnover: path analyses based on meta-analytic findings. *Personnel Psychology*, 46(2), 259–293.
- [49] Wright, V. (1942). Summary of literature on social adjustment. *American Sociological Review*, 7(3), 407–422.
- [50] Yusoff, M. S.B., Rahim, A.F.A., Aziz, R.A., Pa, M.N.M., Mey, S.C., Ja'afar, R., & Esa, A.R. (2011). The validity and reliability of the USM Personality Inventory (USMaP-i): Its use to identify personality of future medical students. *International Medical Journal*, 18(4), 283–287.

Reinventing Logistics: Use of AI & Robotics Technologies

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Abstract: Robotics and AI as a technology have automated warehousing technologies which has brought in huge transformation in order fulfillment and material handling work advancement. As these technologies become even more sophisticated, it would further help in making operations & Logistics simplified. Robotics has become a buzzword and is being used extensively in all the fields. This study investigates the various IT solutions which are available in logistics and warehouse management at many different levels. The research elaborates on the commonly used warehouse automation solutions which are being used by the businesses in their operation are systems like: Articulated Robotic Arms, Automated Guided Vehicles (AGVs), Automated Storage and Retrieval Systems (AS/RS), Automated Guided Carts (AGCs), Autonomous Mobile Robots (AMRs), many of Goods-to-Person technology (G2P). It further discusses the future scope of these technologies.

Keywords: AI, Robotics, Logistics, Automated Guided Vehicles, Automated Storage and Retrieval Systems, Automated Guided Carts, Autonomous Mobile Robots, Goods-to-Person Technology

INTRODUCTION

There had been a disruptive evolution of the retail market supported by the immense growth of technology, smartphones and smart devices. It has changed the way people purchase goods nowadays. Online shopping and transactions has been on a steady rise. Customers are much more demanding and looking for instant gratification by ordering and expecting delivery as soon as possible. A report by 10 ecommerce trends found that presently 10% of U.S. retail sales is online while 56% of in-store purchases are again eCommerce/digital influenced. The online sales are expected to grow by nearly 15% annually. What this means is that just having a brick and mortar store would not mean survival without the online presence, which is slowly becoming the customers' preferred channel. The retailers understanding these changing trends have integrated the digital ecommerce in all aspects. This has further changed the way goods are distributed from Distribution Centres to customers. To meet the ever changing expectations of customers, the world of logistics and warehouse management is constantly evolving and changing. "Globalization has caused many supply chains to

be visible to automation and several other technologies (big data, robotics, artificial intelligence, 3D printing and so forth). The shift towards creating a new intelligence is now being witnessed over several fields” (Lorentz & Hilmola, 2012).

The rise of E-business lead to growth of new and innovative business models. Supply chain professionals of present day are dealing with “omni-channel retailing”, “complex global supply chains and consignment inventory”(Da Silveira and Cagliano, 2006). Therefore the ecommerce companies are making huge investments in adopting robotics and automation based supply chain technology. There is an internal pressure of increasing throughput, handling of greater volumes of inventory while cutting costs, and reducing inventory cycles and maximizing productivity at the same time they have to meet the customer expectations faster delivery such a next day shipping, commoditization as well as Amazon effect. The immense growth of online business has forced that warehousing to adopt advanced technologies to solve challenges of real-time tracking, processing, and on-time delivery of packages more effectively (Loertta, 2018). This is where automation steps in to help meet the demands of online retailers or “e-retailers”. Online retailers are nowadays adopting some form of automation in their warehouses to improve product movement for efficient order fulfillment, storage and reducing the faulty return pickups so as to keep delivery costs to minimum and remain competitive in the online market.

The use of robotics & other IT supported technologies have become the foundation for Warehouse Automation. In the age of robotics, they are categorized into two categories: behavioral-based robots and industrial robots. Specifically for warehouse management, the industrial robots are used (Floreano, 2001).

Warehouse automation basically means the use of various IT based technologies that allows a warehouse to operate much more effectively and efficiently so as to achieve greater outcomes with contributing significantly less efforts. revealed that “59% of IT and operations personnel in manufacturing, retail, transportation and wholesale market segments planned to expand process automation between 2017 and 2022” (Zebra’s Warehouse Vision reports, 2019). Retailers face an increased number of online orders and package shipments daily and this number becomes huge almost doubles up at the time of special sales around Diwali, Holi or other festivals when they launch special big billion day sales or great Indian festival etc. To fulfill the large number of orders while maintain low costs, the e-retailers require support of automation especially it becomes impossible to deliver on time without any form of automation.

Thus application of automation in warehousing and distribution helps e commerce businesses in tackling the high logistics demands without high maintenance costs (Nolfi & Floreano, 2001). A range of technology options are available for e-retailers to consider and choose the technologies for their warehouse management.

WHY ECOMMERCE BUSINESSES ADOPT AUTOMATION TECHNOLOGIES

The e-commerce is growing rapidly around the globe which is causing drastic changes in the retail landscape. As the customer expectations are changing, it requires manufacturers, distributors, retailers, distributors and logistics services providers to change how customer orders are fulfilled for which they need to reconfigure their backend fulfillment & warehouse operations as well.

The warehouse is not only a back-end operation but rather plays a critical role in the supply chain. Any issues in the operations of a warehouse can lead to delays and impacts the customer satisfaction and cash flow of the organization. Efficient Warehouse management has become an art in itself. It can provide greatly enhanced efficiencies and improve performance and support company growth. Thus automation comes in handy improving warehouse management. “In the beginning, when logistic and ecommerce companies considered to use robots to carry out their business practices, there wasn’t enough technology to carry out the tasks of carrying and handling a wide array of various shapes” (Deutsche Post DHL Group 2016).

Warehouse automation helps ecommerce businesses to experience several of the following benefits:

- To meet the accelerated fulfillment demands - The fast growth of e-commerce has compressed order fulfillment times. Customers expect expedited delivery - same-day or next day delivery. Automation thus helps in fulfilling agile and nimble order delivery.
- Lower Costs: Automation helps in reducing operating expenses and unnecessary errors, reducing overhead costs and the costs related with safety, labor, equipment and maintenance. It also reduces the costs associated with energy consumption and storage space. Automation leads to enhances warehouse space utilization and flow.
- Workforce Productivity & Retention: Automation can increase efficiency and productivity of human resources. The organizations do not need to employ more people rather they attain greater productivity out of each employee without increasing the headcount. This makes the work of a warehouse team easier by minimizing manual processes and makes it further safer which further leads to increased retention of employees.
- Healthier Inventory: Automating processes leads to enhanced inventory data collection and sharing among different functional areas. This leads to better inventory management and control, making it almost 99.9999% accurate. It helps in reduction of lost inventory, shrinkage and misplacements and lesser shipping errors. It uses just-in-time (JIT) methodology for order fulfillment

- Sustainable “Green” Practices: Automation helps in contributing to environmental protection. It reduces land use as inventory is minimized, produces lesser wastage, reduces the energy requirements for running the facilities and overall lowers the costs. In case of refrigerated or temperature-controlled facilities or warehouses which deal with special products or hazardous waste, these benefits to environment. These benefits become especially impactful for that handle.
- Building brand and reputation: Automation leads to efficient handling of orders and timely delivery of orders. This creates a Brand image and reputation of the organization amongst customers and suppliers. This leads to repeat business for the business

THE TECHNOLOGIES

The success of e-commerce business depends upon the speed and accuracy with which items are picked as it eventually influences the fulfillment lead time that is the time when the order is first being placed to the time when the item is delivered to the customer. To ensure this speed and accuracy, warehouse automation comes in very handy.

Warehouse Automation is mostly of two types Process Automation and Physical Automation.

Process automation also known as system automation consists of digitization of manual processes such as inventory data collection and integrates that data with the database or ERP system of the organization. Process automation consists of usage of ecosystem of barcoding and wireless barcode scanners which is used for inputting data about the items and tracking the items. This data is further shared and saved in the central database of the organization where it can then be used across all the functional areas such as marketing, logistics, and production of the organization. Physical automation includes all kinds of mechanized technologies or machines used for automation. It consists of usage of robots and robotic systems in the warehouse. These technologies which are used in physical automation are much more expensive and costly to implement as compared to process automation. Examples of physical automation technology include Autonomous Mobile Robots (AMRs), goods-to-person (GTP) technology, Automated guided vehicles (AGVs) etc.

Barcode labeling is a part of Process automation. It is the most basic level of automation which consists of usage of printed paper, specific scanners and IT based applications. Out of the many warehouse automation solutions, the use of barcode labeling is the cheapest and easiest to carry out. The products are barcode labeled which are then tracked with help of scanners at various points in supply chains. The usage of these label helps in correct entry of data and product into the system which further reduces the chance of errors in inventory tracking or shipping of goods.

This further serves as basis for Physical automation. Barcode labeling technology becomes the fundamental identification of products, based on which further operations of robotics and mechanized technologies work.

Barcode labeling helps in Inventory tracking. Using barcode the items are tracked inside the facility at arrival during receiving, during its storage and handling and during its shipping stage. Therefore it forms the foundation of entire warehouse automation. It thus prevents picking or ordering errors. It also helps in automatic data collection which can lead to better arrival planning for goods. For e.g. Operators can easily ensure same time delivery of cargo and shipment inventory. It also improves traffic flow and picking efficiency within the facility. Since the required data is easily available to operators in machines in their hands, it ensures easier identification of shelves and areas for unloading and picking, speedy and correct unloading and picking, timely departure and delivery of every item. Based on the data collection reallocation of employees to high priority areas can be easily done which prevents the staff shortage and delays. All these advantages of Bar Coding ensures that no 'out-of-stock' situations occur as the software monitors and tracks all the items through all the stages in facility. This information about the items is synched with WMS of the company for further rapid and transparent data sharing across company systems so as to enhance decision making across management levels. By tracking the quantity of goods through bar code labels, the reordering of items can be automated. Whenever the amount falls closer to the pre-defined threshold levels systems automatically reorders ensuring no 'out-of-stock' scenarios.

The Amazon was the leader in innovation the warehouse management with Robotic technologies. The Amazon were the first one to use the robots called Kiva System's which were the automated guided vehicles used in the warehouse & fulfillment centers. Later in 2012, Amazon bought over the Kiva Systems and renamed the company as Amazon Robotics. As of 2019, they are using almost 100,000 robots in their warehouses for their fulfillment operations (Donna 2019). These robots are very advanced, they can pick up entire shelves of products and deliver them to packing stations situated in specific areas of a facility or a warehouse. These robots are based on algorithms which can identify the most popular items and what is their closest supply point. They also have sensors which can prevent collisions on the way.

ADVANCED TECHNOLOGIES

The advanced technologies are being produced and used in warehouse management all over the World. "Recent studies show that China has overtaken Japan to become the world's largest consumer market for industrial robots" (Munford 2015).

Automated Storage and Retrieval System (ASRS or AS/RS)

Consists of an variety of PC controlled frameworks for automatically unloading or setting as well as picking or recovering loads from specified areas in a facility or a

warehouse. These systems are especially useful in situations where there is movement of extremely high volume of items within the facility or where there is high storage and efficient space requirement. A proficient AS/RS framework assists organizations with cutting costs by limiting the measure of pointless parts and items away, and improving association of the substance of a distribution center. Because of robotized forms, it likewise takes into account more extra room because of high-thickness stockpiling, smaller passageways, and so forth. Automation decreases work costs while bringing down workforce prerequisites and expanding security. These systems enable efficient and cost effective handling and coordination for picking, packing and shipping of items from a warehouse.

Goods-to-Person Technology (G2P)

This technology is best suited for the present day high volume operations based ecommerce where online orders consist of individual products. Hence G2P is specially useful for split case order fulfillment which consists of individual units which have to be picked from individual locations and placed into a shipping tote or carton. The traditional picking consisted of persons to good model where individual picker going to a specific product to pick it. This wasted time and was labour expensive and lead to decrease in number of orders processed. In contrast to P2G model, in G2P instead of person going to goods, the good is brought to the person. The stored individual items or SKU's are automatically picked from storage and brought to the picker or to a pick station. "Since the picker does not have to walk, the focus at the pick stations and pack stations is on ergonomics and high productivity. Model minimize wasted time between picks and increase the number of orders processed per person" (Kim, 2015). There are many different kinds of Goods to Person technology but they all are based on same basic fundamental where the automated system brings SKUs to a stationary pick station and not vice a versa.

At present, a large number of extremely efficient goods-to-person systems are available in the market.

Some of the companies that provide G2P based solutions include Swisslog's AutoStore, Dematic's Multishuttle, TGW's Commander, SmartCarrier and Kiva which facilitate agile and precise order fulfilling for smaller order quantities based ecommerce.

"This has been largely influenced by heightened processing capability and fully-integrated controls architecture developments, making these high-SKU-count, high-speed systems possible" (Kuffner & Diankov 2008). These G2P solutions can include multiple components based technologies such palletbased or tote/carton-based systems, high-density storage systems, robots, horizontal and vertical carousels and vertical lift modules as well as have flexibility to be scalable for changes in increased or decreased products.

Automated Guided Vehicles

An automated guided vehicle or automatic guided vehicle (AGV) are the most commonly used technology based solutions which are used for moving materials in a warehouse or other manufacturing facilities. The AGV's are the mobile robots that follows markers or wires in the floor, or uses vision or lasers. They are often termed as "driverless" vehicles which include robotically controlled industrial lift trucks which were earlier manually operated, used in manufacturing and distribution settings. The present day AGV's provide safe, efficient, cost-effective movement of goods. They allow better allocation of employees to tasks and deal with labour shortages.

AGV's technology is known by other names as well such as laser guided vehicle (LGV) or *Fahrerlose Transport system* (FTS) in Germany or *förrarlösa trucker* in Sweden. The cheaper or lower cost magnetic tape based version are called Automated Guided Carts (AGCs). Many different models of AGC's are available in the market which can be used to move the products and carry and deliver loads across a warehouse or a manufacturing plant usually guided by magnetic tape.

The first commercially produced AGV's were launched by Barrett Electronics a US based Company in 1950. In its earlier version, these AGV's used to be like a tow truck which used to follow floor based wiring system instead of a rail. In the next version, came the AGV's based on invisible UV markers. One of the first practical application was the delivery of mails in offices at the Sears Tower in Chicago. With further technology development the AGV's have become even more sophisticated and are based on laser technology and there also called LGV (Laser Guided Vehicle). The present day AGV's have the capability of communicating with other robotic machines in warehouse in ensuring smoother and safer movement of products for storage or shipping to their intended destination.

Autonomous Mobile Robots

Autonomous mobile robots (AMRs) are the latest and advanced version of AGV's. They are much more sophisticated and efficient. They are faster, smarter and easier to set up. They are a form of automatic guided vehicles (AGVs). They can work without any supporting infrastructure like precisely located laser targets or wires or magnets implanted in the floor. They have mapping and obstacle avoidance capability with a human robot interface. They consist of powerful AI technology based laser sensors, sophisticated cameras systems, and computer hardware which allow them to operate and navigate dynamically using a map by understanding their operating surrounding. They are not restricted to fixed routes rather they can plan and replan their own paths and travel faster. The AI technology converts them into smart devices that can identify and react to other machines, forklifts, cars, people and other material handling equipment and can work safely work in their busy environment. They even have advanced capabilities such as following a specific person wherever they go.

These newer systems are cost effective and scalable for future expansions. Some of the organizations providing AMR solutions in market include Veridian, Fetchrobotics, AGVNetworks, quicktron and many more. AMRs can majorly be of two types:

Based on Fleet Management: deal with bigger loads. They route the robots from a starting point to an end point.

Based on Picking Optimization: robots under this, try to increase picking throughput by assimilating the movement of people and machines working in a process flow design. It supports smaller loads as it supports picking to cartons and totes.

“The pick optimization segment, driven by the growth of e-commerce, is by far the faster growing segment” (Futch, 2019). Two of the renowned suppliers of this technology are 6 River Systems and Locus Robotics. AGCs engage carts underneath and transport them safely. The load remains above or on the AGC, for this reason Automatic Guided Carts are also called Lurking AGV, Under Cart AGV, AGV transfer cart or Tunnel Type Automated Guided Vehicles.

Articulated Robotic Arms

Robotics arms are one of the important technology solutions that can be used in warehouses specially with high product movement as in case of e-commerce based ventures. These are the standalone arms that are typically used in case of repetitive tasks. Robotic arms follow predetermined movements for specifically located objects. They have onboard controllers, sensors or translators through which based on their speed, position, direction and distance their working is controlled. This allows them to be sensitive to and interact with their environment. In case of complex situations such as when object position is not predetermined the sensor processing of robotics arms is additionally collaborated with artificial intelligence and machine vision so as to identify the object position and further control the movement of the arm. Robotics arms are also called jointed robot manipulator or even full robots.

Robotic arms are of many different types, but based on their mechanical structure they are categorised into four major categories:

1. Cartesian robots also known as Gantry robots have three joints with the standard X-Y-Z Cartesian axes.
2. Cylindrical arms do not have specified number of joints rather they operate on a rotating cylindrical axis on one fixed rod.
3. Spherical (polar) arms are those arms having joints which allow full rotation spherically.
4. SCARA robots are used for ‘pick-and-place’ work. It consists of two parallel rotary joints that allow full movement through a plane.

Automated Guided Carts

Automatic Guided Carts (AGC) is most cost effective solution which are in demand these days especially by small- and mid-sized manufacturers in a various industries where the material handling is at smaller scale. AGC's also called SmartCart are a flexible version of Automatic Guided Vehicle which is based on following magnetic tape. Magnetic tapes are easiest as well as faster to install or modify the guideway of AGV's as compared to laser guided AGV systems (Rebecca 2014). Therefore the SmartCart AGCs are automatic, durable, and reliable at the same time cheaper and easier to install. Therefore for small manufacturers AGC's are appropriate for point-to-point moving and transporting goods in a warehouse and plant.

Automated Guided Carts (AGC) like AGV's are driverless transport vehicles which can goods between two or more picking stations on a determined route. SPS controls the load for AGC's. Small companies are buying AGC's to increase floor efficiency and reduce their operating costs.

CONCLUSION

As the online sales and e-commerce grows worldwide so is the demand for faster movement of products through the supply chain. The ever increasing demands of customers for faster fulfilment of orders along with the severe competition and in growth of newer business models have pushed the companies specially the ecommerce companies to look for innovative technology solutions to cater to their customers. This had lead to a growth of a new generation of technology solutions which are intelligent, smart , autonomous, mobile robots which can be useful in their supply chains and especially their warehouses. These solutions are helping these companies to rapidly expand and meet the increased demand while ensuring lower operating costs, stay competitive and further manage the labor shortages and efficiency. There is a huge increasing demand for the logistics robots. "A recent report by Tractica Research estimates that the worldwide sales of warehousing and logistics robots will reach \$22.4 billion by the end of 2021, with robot unit shipments reaching 620,000 units per year by 2021. There are more than 50 existing and emerging firms vying for customers within this space. An estimated amount of \$10.34 billion revenue will be generated by the global warehouse robotics market by 2020" (Bogue 2018).

This clearly reflects that the robotics based modern logistics is the future of supply chains across the globe. By automating the basics functions of product movements in assembly chain, manufacturing plant or a warehouse, the organizations are able to handle product movement much more effectively and efficiently removing the possibility of human error. "Mobile robotics solutions reduces the probability of product being improperly received, stored, transferred, picked, packed, or shipped to the customer" Barks (2017). These robots make life and businesses stress-free and harmless.

At the end of the day, the implementation of automation to the warehouses need not be an upfront one time investment at one go. A progressive adoption of automation to update the current warehouse system can be a viable option (Starship, 2018). With a well-planned integration of appropriate equipment, e-retailers can have a complete warehouse system suitable for their operation, addressing even complex picking challenges.

REFERENCES

- [1] Barks, C 2017, 'Caution: Robot crossing. A show with robots so advanced, when they dance, they 'do the human', *Electrical Apparatus*, May 2017.
- [2] Bogue, R 2018, 'Growth in e-commerce boosts innovation in the warehouse robot market', *The Industrial Robot*, vol. 43, no. 6, pp. 583–587.
- [3] Da Silveira, G J C & Cagliano, R 2006, 'The relationship between inter-organizational information systems and operations performance', *International Journal of Operations and Production Management*, Vol. 26, no. 3, pp. 232–53.
- [4] D'Andrea, R 2014, 'Can Drones Deliver?', *IEEE Transactions on Automation Science and Engineering*, Vol. 11, no. 3, pp. 647–648.
- [5] Deutsche Post DHL Group 2016, 'Robotics in logistics: A DPDHL Perspective on implications and use cases for the logistics industry', DHL Trend Research, DHL Customer Solutions and Innovation, viewed 18 Decemeber 2019, <https://www.dhl.com/content/dam/downloads/g0/about_us/logistics_insights/dhl_trendreport_robotics.pdf>
- [6] Diaknov, R & Kuffner, J 2008, 'Openrave: A planning architecture for autonomous robotics', Robotics Institute and Technology, viewed 15 December 2019, <<https://pdfs.semanticscholar.org/c28d/3dc33b629916a306cc58cbff05dcd632d42d.pdf>>
- [7] Donna, T 2015, 'Meet amazon's busiest employee – The kiva Robot', viewed 15 October 2019, <<https://www.digitalpulse.pwc.com.au/infographic-evolution-robots-ai/>>
- [8] Fuchs, S, Haddadin, S, Keller, M, Parusel, S, Kolb, A & Suppa, M 2010, 'Cooperative Bin-picking with timeof-flight camera, and impedance controlled DLR Lightweight Robot 3', *Proceedings of the 2010 IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 4862–4867.
- [9] Fuch,M 2017, 'Rise of warehouse robotics', viewed 14 Nov 2019, <<https://www.mhlnews.com/technology-automation/article/22054632/rise-of-the-warehouse-robots>>
- [10] Kim, E 2015, 'Amazon is now using a whole lot more of the robots from the company it bought for \$775 million', *Business Insider*, viewed 12 Nov 2019, <<https://www.businessinsider.com.au/amazon-doubledthe-number-of-kiva-robots-2015-10?r=US&IR=T>>.
- [11] Liang, C, Chee, J K, Zou, Y, Zhu, H, Causo, A, Vidas, S, Teng, T, Chen, I M, Low, K H, Cheah, C C 2015, 'Automated Robot Picking System for E-Commerce Fulfillment Warehouse Application', *Proceedings from the International Federation of Promotion Mechanical, Machinery and Science World Congress*.
- [12] Lorentz, H & Hilmola, O 2012, 'Confidence and supply chain disruptions', *Journal of Modeling in Management*, vol. 7, no. 3, pp. 328–356.
- [13] Loretta, C 2016, 'Robots Gain Traction with Supply Chain Managers; Over half of supply chain managers surveyed by Deloitte and MHI expect robotics and automation to have a significant impact on their business', New York, Dow Jones & Company Inc.

- [14] Manufacturing Winner 2012, 'Otis Technology: Manufacturer goes lean with materials handling', *Modern Productivity Awards*.
- [15] Munford, M 2015, 'China, Russia team up on \$200 million robotics deal', Forbes Tech, viewed 4 November 2019, <<https://www.forbes.com/sites/montymunford/2015/04/23/china-russia-team-up-on200-million-robotics-deal/#24e3a4745ea3>>.
- [16] Nolfi, S & Floreano, D 2001, '*The Biology, Intelligence, and Technology of Self-Organizing Machines*', Massachusetts, MIT Press.
- [17] PricewaterhouseCoopers 2017, 'Infographic: The Evolution of Robotics', Digital Pulse, viewed 21 October 2019, <<https://www.digitalpulse.pwc.com.au/infographic-evolution-robots-ai/>>.
- [18] Rebecca, T 2014, 'Will smart robots revolutionize the supply chain?', *Retail Week*, London.
- [19] Starship 2018, 'Starship Business', viewed 2 November 2019, <<https://www.starship.xyz/business/>>.
- [20] Syed M. Zubair Bokhari 2019, 'Zebra's Warehouse Vision report -XDIMENSION', viewed 25 November 2019, <<http://www.scdigest.com/ontarget/19-06-25-1.php?cid=15617>>

Impact of Behavioural Biases on the Investment Decision of Youths

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Abstract: Investors' behaviour is highly dependent on rational and irrational thinking. Investors' behaviour plays a vital role in driving the fundamental as well as the market value of the securities. Many of the empirical studies highlighted the irrational thinking behaviour of the investors wherein the reasons for under evaluation and over evaluations of securities in the market is attributed to the different dimensions of human behaviour. Various recent studies suggest that there is a predominant impact of behavioural biases namely investment sentiment, overconfidence, overreaction & underreaction and herd behaviour in the investment decisions. Irrationality was observed to be one of the most important assumptions among the investors' behaviour during the financial crisis mostly due to lack of financial knowledge (Friedman and Kraus, 2011). Now the question arises whether the educated youths are influenced by the behavioural biases in their investment decisions. This present study aims to know the impact of education level and behavioural biases namely investment sentiment, overconfidence, overreaction & underreaction and herd behaviour on the investment decision which is measured through two aspects - one through fundamental analysis and another through technical analysis, in selecting the appropriate security. Partial regression model is used to see the direct effect of education level and the mediating effect of behavioural biases (both direct and indirect effect as per Baron and Kenny, 1986). Sobel test was used to find the statistical significance of the indirect effect of the behavioural biases namely investment sentiment, overconfidence, overreaction & underreaction and herd behaviour on the investment decision. The education level and cognitive behavioural biases of the students will have an impact on their investment decisions. Therefore, the role of education and the mediating effect of the behavioural biases will help in scheming different products and services aiming at the young generation of investors.

INTRODUCTION

It is not only the behavioural dynamics of the individual investor that influences the financial decision, but, financial literacy also is found to play an important role in understanding the over complex financial products and services. The complexity of the financial products as well as the significance of financial selection by the household is influenced by the financial literacy of the individual investor (Lusardi and Mitchell, 2007). It is also pertinent in the recent years that the innovative financial products and investment instruments have encouraged the financial investors to actively participate

in the financial markets thereby making financial literacy even more imperative during recent times (Calvet *et al.*, 2004). Complexity of the products and services available in the financial market has innovated quite a lot and thus the role of financial literacy in making optimum investment selection has become essential in the present global scenario. Around the world financial literacy plays an important role in financial understanding of the products and making appropriate improvement in the financial decision-making (Lusardi and Mitchell, 2014). Financial literacy is understood to be an overall understanding of the financial products but Clark *et al.* (2017) defines financial literacy as “an understanding of the information covering financial services and financial investment and the various perspectives which is important and crucial for the household investors”. Absence of symmetrical information associated with financial terms is the indicator of financial literacy. Financial literacy is not only the problem of the developing countries but the developed financial markets also witnessed huge financial losses due to ineffective financial planning (Zucchi, 2018). The lack of financial literacy is associated in non-identification of the market risk during the financial crisis of 2008 (Klapper *et al.*, 2013). The need for financial literacy was even more evident during the financial crisis of 2008 and the time thereafter as the global financial crisis highlighted the ignorance among the investors about the financial markets (Klapper *et al.*, 2013). The crisis of 2008 highlighted the fact that the complexity of the financial products was not comparable and there by the necessity of understanding financial problems was important (Agnew *et al.*, 2007). Active involvement of the individuals in the financial management also necessitated the need for financial literacy around the world. Irrationality was observed to be one of the most important assumption during the financial crisis leading to the financial behaviour of investors mostly due to lack of financial knowledge (Friedman and Kraus, 2011). This particular domain is captured in the financial behavioural finance dimension wherein it is argued that the rationality in the decision making process is not always the case (Ackert, 2014), as highlighted in the modern portfolio theory by Markowitz (1999), Factor Model (Fama and French) as well as Capital Asset pricing model (Sharpe, 1977).

Rationality is projected to be one of the most important factors in dealing with economic problems which deals with the maximization of utility behaviour of human beings. The economic models and the standard finance theory heavily depend on the assumptions of market efficiency and rationality. Efficient market is defined as a market having large number of profit maximisers competing with each other who are rational; and, the current information about the securities is freely available to all the market participants (Fama, 1965). Over a period of time, it has been argued that the rationality assumption does not hold in the financial domain which involves lot of complex decision-making process. The behavioural finance dimension considers the role of rational and irrational thinking in driving the investor behaviour. The fundamental value of the security is not always the derived true value, but, psychological dimensions of the investors play a significant role in driving the fundamental as well as

the market value of the securities (Shefrin,2000). Rational thinking in the investment decision-making process is often highlighted in many of the empirical studies, wherein, the reasons for under evaluation and over evaluations of securities in the market is attributed to the different dimensions of human behaviour. The seminal study by Kahneman and Tversky (1979) highlights the role of human behaviour in the investment decision making and is also supported by the study (Shiller, 2000) which significantly contributes to the understanding of cognitive biases and their role in the investment decision making of the individual investor.

The lack of understanding of the financial market is not the only factor influencing investment decision as may be understood by the arguments already made, but it is pertinent to understand that irrationality and cognitive biases also plays an important role in the investment decision of the individual. The behavioural biases influence rational decision making and these biases are empirically acknowledged under the cognitive psychology studies. “Prospect Theory” proposed by Kahneman and Tversky (1979) is one of the seminal works which highlights the patterns of decision-making and portfolio selection in risk prevailing situations, however, financial literacy cannot be ignored. It is also seen that some of the household lacked common information while making financial decisions (Awais *et al.*, 2016). Financial learning and financial literacy do not always signify the extent of rational decision making and their influence in the financial decision-making process (Reich and Berman, 2015). There exists a contradiction between the efficiency of financial education and the financial literacy in having an influence on the investors long run and short run behaviour (Sayinzoga *et al.*,2016). It is argued that financial literacy increases the efficiency in the individual investors while managing their credit risk, cash flow as well as savings and investment (Sundarassen *et al.*, 2016).

THEORETICAL UNDERPINNINGS

Behavioural aspects play an important role in deciding the financial decision and is well documented in the literature concerning the interdisciplinary experimental financial research (Asaad, 2012). In this particular section the behavioural biases like investor sentiment, over reaction and under reaction, over confidence and herd behaviour influencing the investors investment decisions is explored to find the theoretical foundation for this particular research.

INVESTOR SENTIMENT

Belief and perspectives of the investor about the future cash flows and the discount rates are indicators of investor sentiment (Baker and Wurgler, 2006). The expectation of investors about the future events are not based on any key fundamental issues and there exist a simple perception about the degree of optimism or pessimism associated with the investor's trading paradigm (Black, 1986). Fundamental analysis for stock selection gives signal to hold stock, but the reaction of the investors may be just

opposite based on their gut feeling and the sentiment prevailing during that time. Certain factors like compensation for resale of price risk in segmented market in case of discount rate related to closed-end fund reflects the sentiment of the investor (Lee *et al.*, 1991). The investor sentiment works in number of ways to influence their investment decisions; however, tax motivations plays an important role and stimulate the investors decision about staying invested in the market (Leonard and Shull, 1996). Market sentiments and volatility are found to be negatively correlated with the expected shift in the sentiment of the investor (Lee *et al.*, 2002). This particular finding implies that the formation of volatility and expected returns are based on the noise trader's sentiment in the market. Market forces has an influence in creating the investor sentiment, however, there exist a correlation between the closed end fund discount which is used as a proxy for investor sentiment with the smallest stock returns as found in the study of Lee *et al.* (1991). The market forces are responsible for creating investor sentiment, but investor sentiment is also influenced by the market noise in the aggregate market as found out in the study of Ben-Rephael *et al.* (2012). The aggregate changes in the equity fund were found to be positively related with the excess return during the short-term period. The market as well as the investor sentiment goes parallel at times, but sometimes they have a different approach wherein the sentiment levels were found to be highly correlated with the market returns and segment having a low forecasting power in case of aggregate market (Brown and Cliff, 2004). The direct correlation about the stock price movement in the direction of sentiment is observed in the market wherein the good news and good earning prospect favours positive movement of the stocks and thus helps in creating a positive investor sentiment (Mian and Sankaraguruswamy, 2012). However, it is not always the case as market reaction is found to be asymmetric in case of earning announcement specially for the investor having a pessimistic sentiment (Jiang, 2011). In the short run the investor sentiment is based on the investors mood and the feedback mechanism creates a positive or negative impact on the investor sentiments and market returns as found out the study of Kling and Gao (2008). The investor sentiment is thus optimistic in case of positive market returns and negative in case of negative market returns. Investor sentiment plays an important role in deciding the stock price discovery and is a systematic factor resulting in fluctuation of the stock price based on the investor sentiment De Long *et al.*, (1990). However, in some cases investor sentiment was not found to be significant in deciding the value and momentum and in deciding the forecasting variations in the value of the stocks Lemmon and Portniaguina, (2006). The positive relationship between the stock returns and investor sentiment is well established Li and Zhang, (2008). Investor sentiment was found to be an important and significant factor in predicting the stock prices where the investors were highly involved in the price sensitivity of the stocks Guo *et al.*, (2017). Incident like terrorist attacks which have a negative impact on the human sentiment influences the returns in the market. The investor sentiment related with the negative events has a negative impact stock market (Drakos, 2010).

Based on the above discussed literature, it can be hypothesized that investor sentiment play a positive and significant role in deciding the investment decisions of the investors.

Human beings as rational investors has emotions and sentiments attached to their feeling and thus behavioural biases has an impact on the decisions which may not be based on rational paradigm.

INVESTOR OVERCONFIDENCE

Confidence in the investor decision making often reflects the capability of the investor to judge the situation and predict the outcome of the market. The domain of behavioural studies has reflected that individuals on an average tend to overestimate the chances of their success and underestimate the chances of their failure (Hirshleifer *et al.*, 2012). Overestimation of individual skills or prospect in analysing the investor confidence in the experimental setup leads to overconfidence paradigm in the investor. The sub-optimal choices and the complex decisions are positively associated with overconfidence whereas age and decision uncertainty are negatively associated with overconfidence (Dittrich *et al.*, 2005). Overconfidence of investor is not bad at all times as in the risk-taking environment overconfident investors are found to survive and dominate more in compared to the pessimist pessimistic investor (Wang, 2001). In another setup it was found out that asymmetric information and inaccurate cues available in the market leads to choices which are not sub-optimal although they were based on investor overconfidence (Besharov, 2004). On an average the overconfident investors tend to perform better with similar investment skill and past performance based on the market perception and the way in which investors react to the information (Glaser and Weber, 2007). In one experimental setup used to analyse the overconfident investors in the financial market, it was found that the higher expected trading and lower expected utility was associated with the overconfident investors (Odean, 1998). Overestimation often leads to overconfidence in trading and that in turn neutralizes as the investor gains more experience (Gervais and Odean, 2001). Overconfident investors were found to be accurate in forecasting returns subsequent to their success, however, they tend to be less accurate in the subsequent prediction (Hilary and Menzly, 2006).

From the above discussion it can be hypothesized that overconfident as behavioural bias stimulates and motivates the decision taking ability of the investor. Overconfidence as a behavioural trait is found to have a significant positive impact in influencing the investors decision taking ability. However, no direct relation can be established between the education level of the investor and overconfidence as a mediating variable in influencing the investor decision taking ability.

OVER REACTION AND UNDER REACTION

In the behavioural finance literature this behavioural trait is often discussed in lot of the studies. Investors tend to overreact in unexpected news and thus undermine the market efficiency in lot of the cases as found in the seminal work of De Bondt and Thaler (1985). Past performance is considered to be the most important indicator by the investors undermining the mean reversion tendencies of the market in influencing

the overreaction of the investors. In one of the studies, it was reflected that stocks with poor past performance tends to perform better in future with higher return and vice versa thus undermining the overreaction tendencies of the investors (Lakonishok *et al.*, 1994). Over reaction and under reaction model was studied as a random walk process and it was perceived that stock price under reacts to an earning reversion as investors believe the change to be temporary; and in another state it was found out that extrapolation by the investor was based on a false trend and thus the stock price tends to overreact (Barberis *et al.*, 1998). Another study considered investor over reaction and under reaction model with an assumption of existing of both informed and uninformed investor. It was observed that the overestimation of the signal regarding stock values was more in case of well-informed investors, while self-attribution bias of the informed investor leads to the underestimation of the market signals (Daniel *et al.*, 1998).

The literature suggests that overreaction and under reaction of the investors as a behavioural bias has a positive and significant impact on the investor decision taking ability. Highly informed investors were found to be more overreacting and thus it can be inferred that higher the education level higher the behavioural trait of overconfidence tends to influence the investor decision taking ability.

HERD BEHAVIOUR

Human beings often tend to follow the trend and thus attribute their failure to the trend, whereas, they take the credit for their success. The imitating nature of the investors to make gain in the market by following another successful investor strategy is well established (Scharfstein and Stein, 1990). The investors tend to imitate the strategies of others although they are not exposed to the same level of information as that of their counterpart. Investors often tend to follow the trend in order to avoid the risk of losing reputation if the decision goes wrong. In another study the information cascade model identifies and indicates that investors often tend to resort to significant trading behaviour based on herding mentality because of the uncertainty associated with the quality of information available to them (Bikhchandani and Sharma, 2000). Conformity bias based on the tendencies of people experience which tends to become more comfortable in following other often leads to the herding mentality (Hirshleifer, 2001). In the professional setup mutual fund managers were found to buy different types of stock at different time horizon, but they tend to sell all the stocks at the same time indicating herd mentality (Grinblatt *et al.*, 1995). Foreign investors were found to exhibit more herd mentality. Institutional investors as well as the individual investors were both influenced by the herd behaviour (Agarwal *et al.*, 2011). The price adjustment process in the market is accelerated with the presence of herd behaviour in the markets (Clarke *et al.*, 2014).

Herding behaviour of the individual investors significantly impact their investment decisions. However, the mediating role of herding along with the education level of the investors is yet to be established in the market. It can be inferred from the literature that herding behaviour often tends to positively and significantly influence the investor decision.

METHODOLOGY

The investment decision measured through two aspect one through fundamental analysis and another through technical analysis is used in this study. The Investment decision through fundamental analysis is coded as IDFA and Investment decision through technical analysis is coded as IDTA; the behavioural biases namely investment sentiment, overconfidence, overreaction & underreaction and herd behaviour along with IDFA and IDTA are measured through constructs designed in the structured questionnaire and the responses are recorded in five-point Likert scale. IDTA and IDFA are the dependent variables in the study, and education level of the students are the independent variables. The behavioural biases namely investment sentiment, overconfidence, overreaction & underreaction and herd behaviour are considered as the mediating variables. Final year students studying in undergraduate level and post graduate in National Institute of Technology is considered as the respondent of the study. The Final year students of undergraduate level and final year post graduate students are taken to be the prospective investors as they are already on the verge of getting placed and are potentially employable candidates.

The theoretical discussion and the relevant literature suggest an overarching impact of behavioural biases namely investment sentiment, overconfidence, overreaction & underreaction and herd behaviour. This particular study aims to study the impact of education level on the investment decision (measured through two aspect one through fundamental analysis and another through technical analysis) in selecting the appropriate security. Based on the literature it is hypothesized in the present study that there is direct and indirect relationship between investor education level and investment decision through the mediation effect of the behavioural factors. The central theme of this paper is to test the direct effect of education level on investment decision (measured at two levels) and to estimate the mediating effect of the behavioural biases namely investment sentiment, overconfidence, overreaction & underreaction and herd behaviour on investment decision through the behavioural factors as mediating agent.

The direct effect of Education level (independent variable) and the mediating effect (both direct and indirect effect as per Baron and Kenny, 1986) is captured with the help of partial regression model. Sobel test is used to find the statistical significance of the mediation effect. The following link (<https://www.easycalculation.com/other/sobel-test.php>) is used to calculate the t statistics and P value of the Sobel test and report the results. Rest of the analysis is conducted in IBM SPSS 22.0 package.

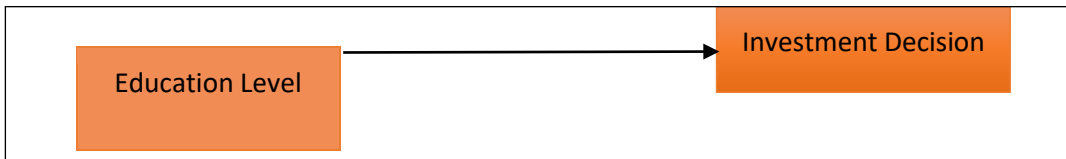


Fig 1: Direct Effect Model

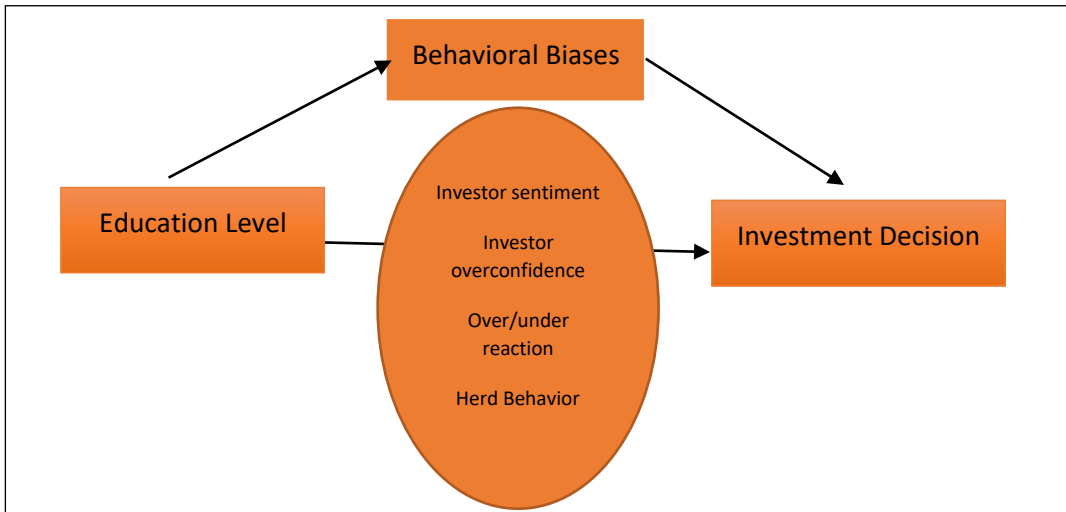


Fig 2: Mediation Effect Model

VARIABLES AND MEASUREMENT

Although financial literacy is one of the important features in investment decision making, the measurement of financial literacy is often complicated due to the absence of typical measures in clarifying and estimating financial education which demonstrate financial literacy as an indicator of making rational financial decision by considering crucial financial information (Remund, 2010). The association between financial literacy and financial education is characterized by meta-analysis in the study of Fernandes *et al.* (2014). Financial literacy and the investment knowledge are captured with the help of 10 multiple choice questions (Volpe *et al.*, 1996). In another report financial literacy is captured by 28 True/False financial skills questions related to spending, saving, investment, cash inflow and outflow and other macro factors (Hilgert *et al.*, 2003). The empirical evaluation of financial knowledge with questions on portfolio diversification is carried by Clark *et al.* (2017). There exists a direct relationship between financial education and the different characteristics of financial behaviour (Ates *et al.*, 2016). In the modern portfolio theory, the investors are characterized as risk averse, as the investors were found to choose the investment with lower risk among the two investment alternatives (Calvo-Silvosa *et al.*, 2017). “Efficient Frontier” or “Markowitz Bullet” is one of the important terms introduced in the risk-return spectrum in order to choose the optimal investment portfolio (Lee and Yoo, 2017). Behavioural factors

are found to be dependent on the attitudes and human judgements and is found to be influenced by several cognitive biases and illusions (Ritter, 2003).

Absence of clear-cut scale in measuring the financial literacy of the Individuals is highlighted in the literature. In most of the cases financial education is directly related to the financial literacy of the investors. For the sake of simplicity in this study education level of the students are taken to be the proxy for their financial literacy with the assumption that higher the education level, higher will be the financial literacy of the students who are considered to be investors in this study. Another assumption in this study relates the fact that higher education level will lead to more rational decision-making process thereby reducing the effect of behavioural bias in the decision-making process. It is hypothesized in this particular study that the behavioural biases will have a positive mediating role in the decision-making process.

The Investment decision through fundamental analysis is coded as IDFA and Investment decision through technical analysis is coded as IDTA. Based on the literature and in discussion with the experts three items were used to capture IDFA and fourteen items were used to capture IDTA. IDFA and IDTA are the dependent variables of the study. Behavioural biases namely investment sentiment is captured using six items, overconfidence is captured using eight items, overreaction & underreaction is captured using five items and herd behaviour is captured using four items. Total 302 respondent's data were considered for analysis after cleaning of data. The reliability score (Cronbach Alpha) of more than 0.94 justifies the reliability of the scale used to measure the dependent, independent and mediating variables.

THE ECONOMETRIC MODEL

The motivation of the econometric model used in the study is based on the regression mediation model as proposed by Baron and Kenny (1986). Simple linear partial regression analysis is used to measure the direct effect, indirect effect and the effect of the mediator variable.

For a dependent variable Y and independent variable X, the linear regression relationship is stated as

$$Y = a + b_1X + e_1 \quad (1)$$

In the relationship of X and Y, the variable F plays the role of mediator variable, then at first stage the direct effect of F on X is captured through the following linear regression equation;

$$F = a_1 + b_2X + e_2 \quad (2)$$

The partial effect of F and X on Y is captured through the following linear regression equation;

$$Y = a_2 + b_3X + b_4F + e_3 \quad (3)$$

Substituting the value of F from equation (2) in equation (3), we get

$$Y = a_2 + b_3 X + b_4 (a_1 + b_2 X + e_2) + e_3$$

$$\text{Or, } Y = a_2 + b_3 X + b_4 a_1 + b_4 b_2 X + b_4 e_2 + e_3$$

$$\text{Or, } Y = a_2 + b_4 a_1 + b_3 X + b_4 b_2 X + b_4 e_2 + e_3$$

$$Y = (a_2 + b_4 a_1) + (b_3 + b_4 b_2) X + (b_4 e_2 + e_3) \quad (4)$$

Comparing equation (1) and equation (4), we get

$$b_1 = b_3 + b_4 b_2$$

$$\text{or, } b_1 - b_3 = b_4 b_2$$

Results and Discussion

Table 1: Reliability Statistics of the Scale Used Reliability Statistics

Cronbach's Alpha	N of Items
.941	41

As per Table No. 1 it is evident that the Cronbach alpha score of 0.94 is quite good and the reliability of the scale used for measuring the dependent, independent and mediating variable is established.

Table 2: ANOVA of IDFA and Education Level ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.543	1	.543	2.826	.094 ^b
Residual	57.666	300	.192		
Total	58.209	301			

a. Dependent Variable: mean_idfa

b. Predictors: (Constant), EDLEVEL

As per Table No. 2 it is seen that the model is not significant at 1% level of significance and thus education level has no impact on the investment decision (according to fundamental analysis) made by the students.

Table 3: Beta Coefficients of IDFA and Education Level

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant) EDLEVEL	4.215	.078		53.708	.000
	.085	.051	.097	1.681	.094

a. Dependent Variable: mean_idfa

As per table no 3 it is seen that the model is not significant at 1% level of significance and beta coefficient of 0.085 of education level has is not significant at 1% level of significance and thus it has no impact on the investment decision (according to fundamental analysis) made by the students.

Table 4: ANOVA of Investor Sentiment and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.811	1	.811	6.320	.012 ^b
Residual	38.509	300	.128		
Total	39.321	301			

a. Dependent Variable: mean_bfis

b. Predictors: (Constant), EDLEVEL

As per Table No. 4 it is seen that the model is not significant at 1% level of significance and thus education level has no direct impact on the investment sentiment of the students.

**Table 5: Beta Coefficients of Education Level
(Investor sentiment as Dependent Variable)**

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant) EDLEVEL	4.336	.064		67.605	.000
	.104	.041	.144	2.514	.012

a. Dependent Variable: mean_bfis

As per Table No. 5 it is seen that the model is not significant at 1% level of significance and thus beta coefficient of 0.104 of education level is not significant at 1% level of significance and thus education level has no direct effect on the investor sentiment of the students.

Table 6: ANOVA of IDFA on Investor Sentiment and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	31.002	2	15.501	170.352	.000 ^b
Residual	27.207	299	.091		
Total	58.209	301			

a. Dependent Variable: mean_idfa

b. Predictors: (Constant), mean_bfis, EDLEVEL

As per Table No .6 it is seen that the model is significant at 1% level of significance and thus investment sentiment plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students.

Table 7: Beta Coefficients of Investor Sentiment and Education Level

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.359	.218		1.650	.100
EDLEVEL	-.007	.035	-.008	-.210	.834
mean_bfis	.889	.049	.731	18.296	.000

a. Dependent Variable: mean_idfa

As per Table No 7 it is seen that the model is significant at 1% level of significance and thus investment sentiment with a beta coefficient of 0.889 significant at 1% level of significance plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students.

Table 8: ANOVA of Investor Overconfidence and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.594	1	.594	5.481	.020 ^b
Residual	32.484	300	.108		
Total	33.077	301			

a. Dependent Variable: mean_bfoc

b. Predictors: (Constant), EDLEVEL

As per Table No. 8 it is seen that the model is not significant at 1 % level of significance and thus education level has no direct impact on the investment overconfidence of the students.

Table 9: Beta Coefficients of Education Level (Investor Overconfidence as Dependent Variable)

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	4.355	.059		73.935	.000
EDLEVEL	.089	.038	.134	2.341	.020

a. Dependent Variable: mean_bfoc

As per table no 9 it is seen that the model is not significant at 1% level of significance and thus beta coefficient of 0.089 of education level is not significant at 1% level of significance and thus education has no direct impact on the investment overconfidence of the students.

Table 10: ANOVA of IDFA on Investor Overconfidence and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	33.149	2	16.574	197.751	.000 ^b
Residual	25.060	299	.084		
Total	58.209	301			

a. Dependent Variable: mean_idfa

b. Predictors: (Constant), mean_bfoc, EDLEVEL

As per Table No. 10 it is seen that the model is significant at 1% level of significance and thus investment overconfidence plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students.

Table 11: Beta Coefficients of Investor Overconfidence and Education Level

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	-.148	.227		-.652	.515
EDLEVEL	-.004	.034	-.005	-.119	.905
mean_bfis	1.002	.051	.755	19.724	.000

a. Dependent Variable: mean_idfa

As per Table No. 11 it is seen that the model is significant at 1% level of significance and thus investment Overconfidence with a beta coefficient of 1.002 significant at 1% level of significance plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students.

Table 12: ANOVA of Investor Over/Under Reaction and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.644	1	.644	6.735	.000 ^b
Residual	28.705	300	.096		
Total	29.350	301			

a. Dependent Variable: mean_bfour

b. Predictors: (Constant), EDLEVEL

As per Table No. 12 it is seen that the model is significant at 1% level of significance and thus education level has direct impact on the investment over/under reaction of the students.

Table 13: Beta coefficients Education Level (Investor Over/Under Reaction as Dependent Variable)

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant) EDLEVEL	4.349	.055		78.537	.000
	.093	.036	.148	2.595	.010

a. Dependent Variable: mean_bfour

As per Table No 13 it is seen that the model is significant at 1% level of significance and thus beta coefficient of 0.093 of education level significant at 1% level of significance has direct impact on the Investor Over/Under Reaction of the students.

Table 14: ANOVA of IDFA on Investor Over/Under Reaction and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	27.027	2	13.513	129.577	.000 ^b
Residual	31.182	299	.104		
Total	58.209	301			

a. Dependent Variable: mean_idfa

b. Predictors: (Constant), mean_bfour, EDLEVEL

As per Table No. 14 it is seen that the model is significant at 1% level of significance and thus investment over/under reaction plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students.

Table 15: Beta Coefficients of Investor Over/Under Reaction and Education Level Coefficients^a

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant) EDLEVEL mean_bfis	.038	.268		.142	.887
	-.004	.038	-.004	-.104	.917
	.961	.060	.682	15.936	.000

a. Dependent Variable: mean_idfa

As per Table No. 15 it is seen that the model is significant at 1% level of significance and investment over/under reaction with a beta coefficient of 0.961 is significant at

1% level of significance and thus plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students.

Table 16: ANOVA of Investor Herd Behaviour and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.087	1	1.087	6.854	.009 ^b
Residual	47.575	300	.159		
Total	48.662	301			

a. Dependent Variable: mean_bfhh

b. Predictors: (Constant), EDLEVEL

As per Table No. 16 it is seen that the model is significant at 1% level of significance and thus education level has direct impact on the investor herd behaviour of the students.

**Table 17: Beta Coefficients of Education Level
(Investor Herd Behaviour as Dependent Variable) Coefficients^a**

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant) EDLEVEL	4.314	.071		60.521	.000
	.120	.046	.149	2.618	.009

a. Dependent Variable: mean_bfhh

As per Table No. 17 it is seen that the model is significant at 1% level of significance and thus beta coefficient of 0.120 of education level significant at 1% level of significance has direct impact on the herd behaviour made by the students.

Table 18: ANOVA of IDFA on Investor Herd Behaviour and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	30.365	2	15.182	163.030	.000 ^b
Residual	27.844	299	.093		
Total	58.209	301			

a. Dependent Variable: mean_idfa

b. Predictors: (Constant), mean_bfhh, EDLEVEL

As per Table No. 18 it is seen that the model is significant at 1% level of significance and thus investment herd behaviour plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students.

Table 19: Beta Coefficients of Investor Herd Behaviour and Education Level

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.799	.199		4.027	.000
EDLEVEL	-.010	.036	-.012	-.286	.775
mean_bfis	.792	.044	.724	17.895	.000

a. Dependent Variable: mean_idfa

As per Table No. 19 it is seen that the model is significant at 1% level of significance and investment herd behaviour with a beta coefficient of 0.792 is significant at 1% level of significance plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students.

Table 20: ANOVA of IDTA and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.979	1	.979	11.803	.001 ^b
Residual	24.895	300	.083		
Total	25.874	301			

a. Dependent Variable: mean_idta

b. Predictors: (Constant), EDLEVEL

As per Table No. 20 it is seen that the model is significant at 1% level of significance and thus education level plays a significant mediating role in influencing the investment decision (based on technical analysis) of the students.

Table 21: Beta Coefficients of Education Level (IDTA as Dependent Variable)

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	4.155	.052		80.580	.000
EDLEVEL	.114	.033	.195	3.436	.001

a. Dependent Variable: mean_idta

b. Predictors: (Constant), EDLEVEL

As per Table No. 21 it is seen that the model is significant at 1% level of significance and thus investment education level with a beta coefficient of 0.114 is significant at 1% level of significance plays a significant role in influencing the investment decision (according to technical analysis) of the students.

Table 22: ANOVA of IDTA on Investor Sentiment and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	17.614	2	8.807	318.803	.000 ^b
Residual	8.260	299	.028		
Total	25.874	301			

a. Dependent Variable: mean_idta

b. Predictors: (Constant), mean_bfis, EDLEVEL

As per Table No. 22 it is seen that the model is significant at 1% level of significance and thus investor sentiment plays a significant mediating role in influencing the investment decision (according to technical analysis) of the students.

Table 23: Beta Coefficients of Investor Sentiment and Education Level

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	1.305	.120		10.890	.000
EDLEVEL	.046	.019	.078	2.368	.019
mean_bfis	.657	.027	.810	24.539	.000

a. Dependent Variable: mean_idta

As per Table No. 23 it is seen that the model is significant at 1% level of significance and thus investor sentiment with a beta coefficient of 0.657 and education level with a beta coefficient of 0.046 are significant at 1% level of significance and thus investor sentiment plays a significant mediating role in influencing the investment decision (according to technical analysis) of the students.

Table 24: ANOVA of IDTA on Investor Overconfidence and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	18.525	2	9.262	376.803	.000 ^b
Residual	7.350	299	.025		
Total	25.874	301			

a. Dependent Variable: mean_idta

b. Predictors: (Constant), mean_bfoc, EDLEVEL

As per Table No 24 it is seen that the model is significant at 1% level of significance and thus investor overconfidence plays a significant mediating role in influencing the investment decision (according to technical analysis) of the student

Table 25: Beta Coefficients of Investor Overconfidence and Education Level

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.955	.123		7.758	.000
EDLEVEL	.049	.018	.083	2.677	.008
mean_bfis	.735	.028	.831	26.716	.000

a. Dependent Variable: mean_idta

As per Table No 25 it is seen that the model is significant at 1% level of significance and thus investor overconfidence with a beta coefficient of 0.735 and education level with a beta coefficient of 0.049 are significant at 1% level of significance and thus investor overconfidence plays a significant mediating role in influencing the investment decision (according to technical analysis) of the students.

Table 26: ANOVA of IDTA on Investor Over/Underreaction and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	16.131	2	8.065	247.502	.000 ^b
Residual	9.744	299	.033		
Total	25.874	301			

a. Dependent Variable: mean_idta

b. Predictors: (Constant), mean_bfour, EDLEVEL

As per Table No. 26 it is seen that the model is significant at 1% level of significance and thus investor over/underreaction plays a significant mediating role in influencing the investment decision (according to technical analysis) of the students.

Table 27: Beta Coefficients of Investor Over/Underreaction and Education Level Coefficients^a

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.996	.150		6.636	.000
EDLEVEL	.047	.021	.080	2.227	.027
mean_bfis	.727	.034	.774	21.563	.000

a. Dependent Variable: mean_idta

As per Table No. 27 it is seen that the model is significant at 1% level of significance and thus investor over/underreaction with a beta coefficient of 0.727 is significant at 1% level of significance and education level with a beta coefficient of 0.047 is significant at 5% level of significance and thus investor over/underreaction plays a significant mediating role in influencing the investment decision (according to technical analysis) of the students.

Table 28: ANOVA of IDTA on Investor Herd Behaviour and Education Level

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	18.395	2	9.197	367.684	.000 ^b
Residual	7.479	299	.025		
Total	25.874	301			

a. Dependent Variable: mean_idta

b. Predictors: (Constant), mean_bfhh, EDLEVEL

As per Table No. 28 it is seen that the model is significant at 1% level of significance and thus investor herd behaviour plays a significant mediating role in influencing the investment decision (according to technical analysis) of the students.

Table 29: Beta Coefficients of Investor Herd Behaviour and Education Level

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.545	.103		15.014	.000
EDLEVEL	.041	.018	.071	2.244	.026
mean_bfis	.605	.023	.830	26.386	.000

a. Dependent Variable: mean_idta

As per Table No. 29 it is seen that the model is significant at 1% level of significance and thus investor herd behaviour with a beta coefficient of 0.605 is significant at 1% level of significance and education level with a beta coefficient of 0.041 is significant at 5% level of significance and thus investor herd behaviour plays a significant mediating role in influencing the investment decision (according to technical analysis) of the students.

**Table 30: Effect of Education Level and Behavioural Biases on Investment Decision
(Based on Fundamental Analysis)**

Behavioural Bias	Total effect of Education Level on IDFA	Direct Effect of Education Level on Behavioural Bias	Direct effect of Education Level on IDFA	Direct effect of Behavioural Bias on IDFA	Point estimate for Indirect (mediation) effect	Sobel Test (t value)	Sobel test (P value)	Whether Mediation effect Statistically Significant
Investor Sentiment	0.085	0.104	-0.007	0.889***	0.092456	2.512	0.01	YES
Investor Overconfidence	0.085	0.089	-0.004	1.002***	0.089178	2.325	0.02	YES
Investor Over/under reaction	0.085	0.093***	-0.004	0.961***	0.089373	2.55	0.01	YES
Investor Herd Behaviour	0.085	0.12***	-0.01	0.792***	0.09504	2.581	0.009	YES

*** Statistically Significant at 1% level of significance

IFA—Investment Decision (based on Fundamental Analysis)

It is evident from Table No. 30 that the total effect of education level of the students on the investment decision (based on Fundamental analysis) is not significant. Thus, education level has no total effect on the investment decision (based on Fundamental analysis). Whereas direct effect of education level on behavioural bias was found to be significant in case of investor over/underreaction and investor herd behaviour. It was found that investor sentiment, investor overconfidence, investor over/under reaction and investor herd behaviour have significant impact on the investment decision (based on Fundamental analysis). The mediation effect or indirect effect of education level on the investment decision (based on Fundamental analysis) through investor sentiment, investor overconfidence, investor over/under reaction and investor herd behaviour were found to be statistically significant, signifying the mediation role played by investor sentiment, investor overconfidence, investor over/under reaction and investor herd behaviour in influencing the investment decision (based on Fundamental analysis).

**Table 31: Effect of Education Level and Behavioural Biases on Investment Decision
(Based on Technical Analysis)**

Behavioural Bias	Total effect of Education Level on IDFA	Direct Effect of Education Level on Behavioural Bias	Direct effect of Education Level on IDFA	Direct effect of Behavioural Bias on IDFA	Point estimate for Indirect (mediation) effect	Sobel Test (t value)	Sobel test (P value)	Whether Mediation effect Statistically Significant
Investor Sentiment	0.114	0.104	0.046***	0.657***	0.068328	2.522	0.011	YES
Investor Over Confidence	0.114	0.089	0.049***	0.735***	0.065415	2.332	0.019	YES
Investor Over/under Reaction	0.114	0.093***	0.047	0.727***	0.067611	2.564	0.01	YES
Investor Herd Behaviour	0.114	0.12***	0.041	0.605***	0.0726	2.595	0.009	YES

*** Statistically Significant at 1% level of significance

IFA--- Investment Decision (based on Technical Analysis)

It can be inferred from table no 31 that the total effect of education level of the students on the investment decision (based on technical analysis) is significant. Thus, education level has total effect on the investment decision (based on technical analysis). Whereas, direct effect of education level on behavioural bias was found to be significant in case of over/underreaction and investor herd behaviour. It was found that investor sentiment, investor overconfidence, investor over/under reaction and investor herd behaviour have significant impact on the investment decision (based on technical analysis). The mediation effect or indirect effect of education level on the investment decision (based on technical analysis) through investor sentiment, investor overconfidence, investor over/under reaction and investor herd behaviour were found to be statistically significant, signifying the mediation role played by investor sentiment, investor overconfidence, investor over/under reaction and investor herd behaviour in influencing the investment decision (based on technical analysis).

CONCLUSION

The lack of understanding of the financial market is not the only factor influencing investment decision as may be understood by the arguments already made, but it is pertinent to understand that irrationality and cognitive biases also play an important role in the investment decision of the individual. The behavioural biases influence rational decision making and these biases are empirically acknowledged under the cognitive psychology studies. Education level has no significant impact on the investment decision (according to fundamental analysis) made by the students. Education level has no direct effect on the investor sentiment of the students. Investment sentiment plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students. Education level has no direct impact on the investment overconfidence of the students.

Overconfidence plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students. Education level has direct impact on the investment over/under reaction of the students. Investment over/under reaction plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students. Education level has direct impact on the herd behaviour made by the students. Investment herd behaviour plays a significant mediating role in influencing the investment decision (according to fundamental analysis) of the students.

Education level plays a significant mediating role in influencing the investment decision (based on technical analysis) of the students. Investor sentiment and education level play a significant mediating role in influencing the investment decision (according to technical analysis) of the students. Investor overconfidence and education level play a significant mediating role in influencing the investment decision (according

to technical analysis) of the students. Investor over/underreaction plays a significant mediating role in influencing the investment decision (according to technical analysis) of the students. Investor herd behaviour plays a significant mediating role in influencing the investment decision (according to technical analysis) of the students. The mediation effect or indirect effect of education level on the investment decision (based on fundamental and technical analysis) through investor sentiment, investor overconfidence, investor over/under reaction and investor herd behaviour were found to be statistically significant, signifying the mediation role played by investor sentiment, investor overconfidence, investor over/under reaction and investor herd behaviour in influencing the investment decision.

REFERENCES

- [1] Agarwal, S., Chiu, I., Liu, C. and Rhee, S.G. (2011), “The brokerage firm effect in herding: evidence from Indonesia”, *Journal of Financial Research*, Vol. 34 No. 3, pp. 461–479.
- [2] Asaad, C.T. (2012), “Experimental finance: a cross-disciplinary exploration linking expectations and behaviours”, *International Journal of Behavioural Accounting and Finance*, Vol. 3 Nos 3/4, pp. 244–269.
- [3] Ackert, L.F. (2014), “Traditional and behavioral finance”, *Investor Behavior: The Psychology of Financial Planning and Investing*, Vol. 1, pp. 25–41.
- [4] Ates, S., Coskun, A., Sahin, M.A. and Demircan, M.L. (2016), “Impact of financial literacy on the behavioral biases of individual stock investors: evidence from Borsa Istanbul”, *Business and Economics Research Journal*, Vol. 7 No. 3, p. 1.
- [5] Agnew, J.R. Szykman, L. Utkus, S.P. and Young, J.A. (2007), “Literacy, trust and 401 (k) savings behavior”, available at: <https://ssrn.com/abstract=1299171> or <http://dx.doi.org/10.2139/ssrn.1299171>
- [6] Awais, M., Laber, M.F., Rasheed, N. and Khursheed, A. (2016), “Impact of financial literacy and investment experience on risk tolerance and investment decisions: empirical evidence from Pakistan”, *International Journal of Economics and Financial Issues*, Vol. 6 No. 1.
- [7] Baker, M. and Wurgler, J. (2006), “Investor sentiment and the cross-section of stock returns”, *The Journal of Finance*, Vol. 61 No. 4, pp. 1645–1680.
- [8] Barberis, N., Shleifer, A. and Vishny, R. (1998), “A model of investor sentiment”, *Journal of Financial Economics*, Vol. 49 No. 3, pp. 307–343.
- [9] Ben-Rephael, A., Kandel, S. and Wohl, A. (2012), “Measuring investor sentiment with mutual fund flows”, *Journal of Financial Economics*, Vol. 104 No. 2, pp. 363–382.
- [10] Besharov, G. (2004), “Second-best considerations in correcting cognitive biases”, *Southern Economic Journal*, Vol. 71 No. 1, pp. 12–20.
- [11] Bikhchandani, S. and Sharma, S. (2000), “Herd behavior in financial markets”, *IMF Working Papers*, No. 48, pp. 279–310.
- [12] Black, F. (1986), “Noise”, *The Journal of Finance*, Vol. 41 No. 3, pp. 528–543.

- [13] Brown, G.W. and Cliff, M.T. (2004), “Investor sentiment and the near-term stock market”, *Journal of Empirical Finance*, Vol. 11 No. 1, pp. 1–27.
- [14] Clarke, J., Ornathanalai, C. and Tang, Y. (2014), “Institutional herding and asset price: the role of information”, Rotman School of Management Working Paper No. 1707868, Toronto, ON, available at: <https://ssrn.com/abstract=1707868> or <http://dx.doi.org/10.2139/ssrn.1707868> (accessed 12 March 2019).
- [15] Calvet, L., Gonzalez-Eiras, M. and Sodini, P. (2004), “Financial innovation, market participation, and asset prices”, *Journal of Financial and Quantitative Analysis*, Vol. 39 No. 3, pp. 431–459.
- [16] Calvo-Silvosa, A., Antelo, S.I. and Soares, I. (2017), “Energy planning and modern portfolio theory: a review”, *Renewable and Sustainable Energy Reviews*, Vol. 77, pp. 636–651.
- [17] Clark, R., Lusardi, A. and Mitchell, O.S. (2017), “Financial knowledge and 401 (k) investment performance: a case study”, *Journal of Pension Economics and Finance*, Vol. 16 No. 3, pp. 324–347.
- [18] Daniel, K., Hirshleifer, D. and Subrahmanyam, A. (1998), “Investor psychology and security market under- and overreactions”, *The Journal of Finance*, Vol. 53 No. 6, pp. 1839–1885.
- [19] De Bondt, W.F. and Thaler, R. (1985), “Does the stock market overreact?”, *The Journal of Finance*, Vol. 40 No. 3, pp. 793–805.
- [20] De Long, J.B., Shleifer, A., Summers, L.H. and Waldmann, R.J. (1990), “Noise trader risk in financial markets”, *Journal of Political Economy*, Vol. 98 No. 4, pp. 703–738.
- [21] Ditttrich, D.A., Güth, W. and Maciejovsky, B. (2005), “Overconfidence in investment decisions: an experimental approach”, *The European Journal of Finance*, Vol. 11 No. 6, pp. 471–491.
- [22] Drakos, K. (2010), “Terrorism activity, investor sentiment, and stock returns”, *Review of Financial Economics*, Vol. 19 No. 3, pp. 128–135.
- [23] Fama, E. F. (1965). Random walks in stock market prices. *Financial Analysts Journal*, 21(5), 55–59.
- [24] Fernandes, D., Lynch, J.G., Jr and Netemeyer, R.G. (2014), “Financial literacy, financial education, and downstream financial behaviors”, *Management Science*, Vol. 60 No. 8, pp. 1861–1883.
- [25] Friedman, J. and Kraus, W. (2011), *Engineering the Financial Crisis: Systemic Risk and the Failure of Regulation*, University of PA Press, PA.
- [26] Gervais, S. and Odean, T. (2001), “Learning to be overconfident”, *Review of Financial Studies*, Vol. 14 No. 1, pp. 1–27.
- [27] Glaser, M. and Weber, M. (2007), “Overconfidence and trading volume”, *The Geneva Risk and Insurance Review*, Vol. 32 No. 1, pp. 1–36.
- [28] Grinblatt, M., Titman, S. and Wermers, R. (1995), “Momentum investment strategies, portfolio performance, and herding: a study of mutual fund behavior”, *The American Economic Review*, Vol. 85 No. 5, pp. 1088–1105.
- [29] Guo, K., Sun, Y. and Qian, X. (2017), “Can investor sentiment be used to predict the stock price? Dynamic analysis based on China stock market”, *Physica A: Statistical Mechanics and Its Applications*, Vol. 469, pp. 390–396.
- [30] Hilary, G. and Menzly, L. (2006), “Does past success lead analysts to become overconfident?”, *Management Science*, Vol. 52 No. 4, pp. 489–500.
- [31] Hirshleifer, D. (2001), “Investor psychology and asset pricing”, *The Journal of Finance*, Vol. 56 No. 4, pp. 1533–1597.

- [32] Hirshleifer, D., Low, A. and Teoh, S.H. (2012), “Are overconfident CEOs better innovators?”, *The Journal of Finance*, Vol. 67 No. 4, pp. 1457–1498.
- [33] Hilgert, M.A., Hogarth, J.M. and Beverly, S.G. (2003), “Household financial management: the connection between knowledge and behavior”, *Fed. Res. Bull.*, Vol. 89, p. 309.
- [34] Jiang, Y. (2011), “Investor sentiment and stock market response to earnings announcement”, Management and Service Science (MASS) 2011 *International Conference, IEEE*, Wuhan, pp. 1–4.
- [35] Kling, G. and Gao, L. (2008), “Chinese institutional investors’ sentiment”, *Journal of International Financial Markets, Institutions and Money*, Vol. 18 No. 4, pp. 374–387.
- [36] Klapper, L., Lusardi, A. and Panos, G.A. (2013), “Financial literacy and its consequences: evidence from Russia during the financial crisis”, *Journal of Banking and Finance*, Vol. 37 No. 10, pp. 3904–3923.
- [37] Kahneman, D., & Tversky, A. (1979). Prospect theory: an analysis of decision making under risk. *Econometrica: Journal of the Econometric*.
- [38] Lakonishok, J., Shleifer, A. and Vishny, R.W. (1994), “Contrarian investment, extrapolation, and risk”, *The Journal of Finance*, Vol. 49 No. 5, pp. 1541–1578.
- [39] Lusardi, A. and Mitchell, O.S. (2007), “Financial literacy and retirement preparedness: evidence and implications for financial education”, *Business Economics*, Vol. 42 No. 1, pp. 35–44.
- [40] Lusardi, A. and Mitchell, O.S. (2014), “The economic importance of financial literacy: theory and evidence”, *Journal of Economic Literature*, Vol. 52 No. 1, pp. 5–44.
- [41] Lee, S.I. and Yoo, S.J. (2017), “A Deep Efficient Frontier Method for Optimal Investments”, arXiv preprint arXiv:1709.09822.
- [42] Lee, C., Shleifer, A. and Thaler, R.H. (1991), “Investor sentiment and the closed-end fund puzzle”, *The Journal of Finance*, Vol. 46 No. 1, pp. 75–109.
- [43] Lee, W.Y., Jiang, C.X. and Indro, D.C. (2002), “Stock market volatility, excess returns, and the role of investor sentiment”, *Journal of Banking & Finance*, Vol. 26 No. 12, pp. 2277–2299.
- [44] Lemmon, M. and Portniaguina, E. (2006), “Consumer confidence and asset prices: some empirical evidence”, *Review of Financial Studies*, Vol. 19 No. 4, pp. 1499–1529.
- [45] Leonard, D.C. and Shull, D.M. (1996), “Investor sentiment and the closed-end fund evidence: impact of the January effect”, *The Quarterly Review of Economics and Finance*, Vol. 36 No. 1, pp. 117–126.
- [46] Li, X. and Zhang, B. (2008), “Stock market behavior and investor sentiment: evidence from China”, *Frontiers of Business Research in China*, Vol. 2 No. 2, pp. 277–282.
- [47] Markowitz, H.M. (1999), “The early history of portfolio theory: 1600–1960”, *Financial Analysts Journal*, Vol. 55 No. 4, pp. 5–16.
- [48] Mian, G.M. and Sankaraguruswamy, S. (2012), “Investor sentiment and stock market response to earnings news”, *The Accounting Review*, Vol. 87 No. 4, pp. 1357–1384.
- [49] Odean, T. (1998), “Volume, volatility, price, and profit when all traders are above average”, *The Journal of Finance*, Vol. 53 No. 6, pp. 1887–1934.
- [50] Ritter, J.R. (2003), “Behavioral finance”, *Pacific-Basin Finance Journal*, Vol. 11 No. 4, pp. 429–437.
- [51] Reich, C.M. and Berman, J.S. (2015), “Do financial literacy classes help? An experimental assessment in a low-income population”, *Journal of Social Service Research*, Vol. 41 No. 2, pp. 193–203.

- [52] Remund, D.L. (2010), “Financial literacy explicated: the case for a clearer definition in an increasingly complex economy”, *Journal of Consumer Affairs*, Vol. 44 No. 2, pp. 276–295
- [53] Scharfstein, D.S. and Stein, J.C. (1990), “Herd behavior and investment”, *The American Economic Review*, Vol. 90 No. 3, pp. 465–479
- [54] Shefrin, H. (2000). *Beyond Greed and Fear: Understanding Behavioural Finance and The Psychology of Investing*. Boston. MA: Harvard Business School Press.
- [55] Sayinzoga, A., Bulte, E.H. and Lensink, R. (2016), “Financial literacy and financial behaviour: experimental evidence from rural Rwanda”, *The Economic Journal*, Vol. 126 No. 594, pp. 1571–1599.
- [56] Sundarasan, S.D.D., Rahman, M.S., Othman, N.S. and Danaraj, J. (2016), “Impact of financial literacy, financial socialization agents, and parental norms on money management”, *Journal of Business Studies Quarterly*, Vol. 8 No. 1, p. 137.
- [57] Shiller, R.J. (2000). *Irrational exuberance*. Princeton University Press. ISBN 0-691-05062-7.
- [58] Sharpe, W.F. (1977), “The capital asset pricing model: a ‘multi-beta’ interpretation”, *Financial Decision Making Under Uncertainty*, Elsevier, New York, NY, pp. 127–135.
- [59] Volpe, R.P., Chen, H. and Pavlicko, J.J. (1996), “Personal investment literacy among college students: a survey”, *Financial Practice and Education*, Vol. 6 No. 2, pp. 86–94.
- [60] Wang, F.A. (2001), “Overconfidence, investor sentiment, and evolution”, *Journal of Financial Intermediation*, Vol. 10 No. 2, pp. 138–170.
- [61] Zucchi, K. (2018), “Why financial literacy is so important”, 26 January, available at: www.investopedia.com/articles/investing/100615/why-financial-literacy-and-education-so-important.asp

Positive Impact of COVID-19 on Media and Entertainment

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Abstract: The world is continuously fighting against the pandemic having a deep stall on growth of global economy due to widespread restrictions and lockdown pan world. In Indian context, it is observed that the penetration of infection is showing a slower curve as compared to world, the impact on economy has been ruthless in many ways. The initial 21-day lockdown period had been estimated to cost nearly \$4.5 billion every single day. Despite about half of the nation's businesses being adversely affected, and supply chains having fallen victim to the pandemic, there does appear a silver lining in the dark clouds. Although the masses are glued to Television to watch Ramayana but still there is no monetization as the companies giving ads are not able to infuse money in advertising currently. On the contrary, companies providing Over the Top (OTT) services like Netflix, Amazon Prime have shown a substantial increase in their viewers with almost an increase of 100% viewership. The majority of the users of Social Media are millennial and due to Lockdown an average increase of 1-2 hours in Social Media surfing has been witnessed. Platforms like Facebook, Instagram, Twitter, Tik Tok has seen a sudden increase in their number of subscribers.

Keywords: Impact of COVID-19, Digital, Media, Facebook, OTT.

INTRODUCTION

COVID-19 is an acute respiratory syndrome which first out broke in Wuhan, China in December, 2019. The World Health Organization declared the outbreak a Public Health Emergency of International Concern on 30 January, and a pandemic on 11 March. According to World Health Organization, as of 17 July, 2020, the virus has spread to 216 countries of the world with 5,85,727 deaths and 13,616,593 infected people pan world. The Virus is not only an International Pandemic but also a concern of serious world health emergency with its increasing numbers day by day.

Due to these raging numbers the pandemic situation has completely shaken the economies of countries across the world. This pandemic has caused a serious situation of recession in almost all countries of the world. It is observed that growth of virus is slower in Indian context, still the effect on the economy has been huge causing a worse recession situation then in 2008. The initial 21-day lockdown period had been

estimated to cost nearly \$4.5 billion every single day. As it is seldom said every coin has two sides and there is always a small ray of hope even in the most tensed situations, there are a few sectors in Indian economy which have benefited in a good way from the Pandemic.

An alarming decrease in the crime rate to an astonishing increase in the environmental health of the nation, COVID has proven to be helpful for a few sectors. India has rightfully adopted the policy of Going Local which may establish India as a strong manufacturing hub in future giving a tough competition to China. Also, India can be very well established as an outsourcing hub for explicit IT and Financial Services. People have become digitally more advanced and there is an increase of 42% in digital payments in the pandemic situation. There is an increase of 100% paid viewership of Netflix Amazon Prime etc. Also, the nationwide lockdown has given a great boom to online shopping and digital marketing companies for branding and advertising of products.

REVIEW OF LITERATURE

The review of literature highlights the positive impact of the pandemic situation on Media and Entertainment Industry.

The review highlights the success of an OTT service, Netflix as stated by Eric Haggstrom, eMarketer forecasting analyst, “After record subscriber additions, Netflix is and will continue to be the media company least impacted by COVID-19. Their business is a near-perfect fit for a population that is suddenly housebound.”(Ahmed, 2020)

According to a report published by Deloitte,” Demand for all forms of Media: TV Programs, short-form video, online gaming and music streaming particularly in geographies in stay home conditions has surged. (Mark Casey, 2020)

The COVID-19 pandemic has drastically changed the way media is consumed globally. With governments imposing restrictions on the movement of people, many are confined to their homes, as a result, social lives have moved online and online media consumption has witnessed a sudden surge from the at-home segments of television, online gaming, and over-the-top (OTT) media platforms. (Wire, 2020)

According to a report published by KPMG, it can be observed that the impact on few segments of Media is high and few is low. From the following figure it can be concluded that the overall impact on media is in different stages as follows:

- A. High Impact on Films, TV and Events.
- B. Moderate Impact on Radio and Animation.
- C. Low Impact on OTT, Online Gaming and Print Media. (Satya Easwaran, 2020)

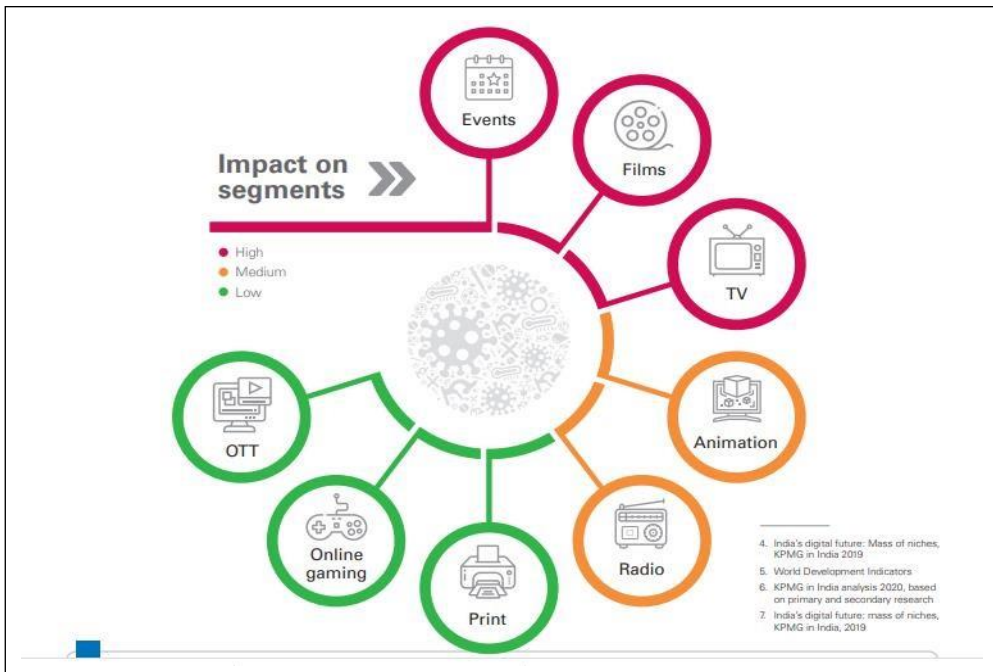


Fig. 1: Impact of COVID-19 on Different Sectors of Media and Entertainment

Sources: COVID 19: Many Shades of a Crisis by KPMG

From the above reviews it can be clearly concluded that alongwith some negative effects on some sectors of M&E Industry, COVID-19 has an substantial positive effect on major paradigms of M&E Industry

RESEARCH METHODOLOGY

OBJECTIVES OF THE STUDY

- To understand the available literature on positive impact of COVID-19 on M&E Industry.
- To analyze the effect of COVID-19 on M&E Industry.

RESEARCH DESIGN

The research design is a blend of exploratory and descriptive research as the data is majorly based on literature available and exploration of the problem for better understanding of the available facts. Case study methodology is used for qualitative analysis of the data.

SOURCES OF DATA AND INFORMATION

Secondary sources of data are majorly used which includes extensive literature from newspapers, online research databases such as inflibnet, national digital library, epsco etc. A huge number of blogs and reports available online were also used for collecting information.

HYPOTHESES OF THE STUDY

The null hypothesis can be:

There is no significant impact of COVID-19 on M&E Industry.

RESEARCH METHOD

For the purpose of analysing the effect of COVID-19 on different sectors of M&E Industry, caselets from different industries have been considered. The cases considered are analysed and their facts and figures are scrutinized thoroughly to draw the findings and conclusions.

CASELETS

[CASE 1] DOORDARSHAN: A TV CHANNEL

An overwhelming response on the broadcast of Ramayana and Mahabharata has been observed by all Indian Viewers. According to the reports published by BARC, the viewership of Doordarshan increased by 40,000% which is like a substantially super high in almost last 20 years. Returns of the mythology shows Ramayan and Mahabharat have garnered maximum eyeballs with an average of 545.8 million and 145.8 million impressions in the week respectively. For the week of 21-27 March, 2020, Doordarshan was the NO.1 TV channel in India. **(BARC India, 2020)**

[CASE 2] YOUTUBE: AN OTT SERVICE

YouTube, which already enjoys widespread popularity in India, has seen a 20.5 percent surge in subscribers in the country. It has garnered over 300 billion views in the first quarter of 2020, growing 13 percent since the fourth quarter of 2019, according to a joint study by Mindshare India and Vidooly(video analytics platform). More than two-thirds of YouTube viewership came from millennials in the 18-to-34 age bracket, which remains the most active group on the platform. And, over 90 percent of video views came through mobile devices, indicating behavioral shifts in media consumption.

[CASE 3] TIK TOK: A SOCIAL MEDIA APP

Although the app has been banned now in India, but the app has been one of the most successful and profit earning apps in lockdown scenario. Downloads of video sharing app TikTok surged by 315m in Q1 2020, making it the most downloaded app ever in any threemonth time period. By comparison, the app saw 187m downloads in Q1 2019, resulting in a roughly 68% increase year-on-year, and a staggering 110m more than its previous record quarter which saw 205m downloads in Q4 2018. It is now estimated that total downloads of the app have surpassed 2bn since its launch in 2016. So far, India has recorded the highest 611 million downloads of the app.

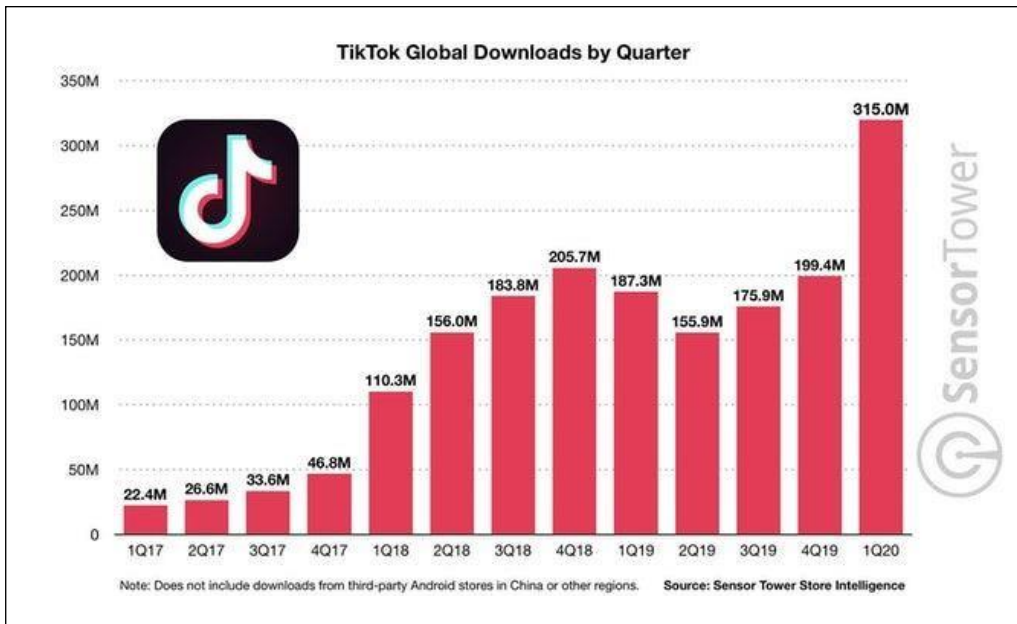


Fig. 2: Growth of Tik Tok

Source: Sensortower.com

FINDINGS OF THE STUDY

From the above caselets it can be observed that:

- A. According to the available evidence, the null hypothesis is not accepted as on the basis of above caselets, it can be concluded that, COVID-19 has significantly impacted the media and entertainment industry in a positive way.
- B. TV Viewership has become very popular which was losing its way in the OTT world. According to a report by BARC the overall TV Viewership has increased by 37% in the third week of March.
- C. The Over the Top services has gained extensive popularity with platforms like Netflix , Amazon and Youtube increasing their viewership with almost 100% with a great focus on short meaningful films and web-series.
- D. Although only Tik Tok has been included as a caselet here, but other platforms like Facebook and Instagram has also shown an increase in subscribers extravagantly.

CONCLUSION

The Pandemic has completely shattered the economy with almost dropping the GDP to almost zero percentage but there is always a ray of hope in the darkest of clouds. It is observed that there are a lot of sectors which have benefited by the pandemic situation. Media and Entertainment, Digital Marketing, E-Commerce Websites,

Digital Payments have shown substantial increase in their revenues and subscriptions.. Although, the loss of human and business life cannot be made right by taking any reforms and decisions but a small ray of hope is visible by seeing the impact of pandemic in these sectors.

REFERENCES

- [1] Ahmed, Y. (2020, April 23). <https://www.indiatoday.in/>. Retrieved May 15, 2020, from <https://www.indiatoday.in/: https://www.indiatoday.in/technology/news/story/covid19-impact-netflix-reaches-almost-16-million-subscribers-in-the-first-three-monthspredicts-a-lower-second-half->
- [2] BARC India. (2020, April). <https://www.barcindia.co.in/>. Retrieved July 17, 2020, from <https://www.barcindia.co.in/: https://www.barcindia.co.in/searchbarc.aspx?q=doordarshan#gsc.tab=0&gsc.q=doordarshan&gsc.page=1>.
- [3] Mark Casey, C.W. (2020). *Understanding the Sector Impact of COVID-19 Media and Entertainment*. India: Deloitte.
- [4] Satya Easwaran, G.M. (2020). *COVID 19: Many Shades of a Crisis* by KPMG. India: KPMG.
- [5] Wire, B. (2020, June 5). <https://www.businesswire.com/news/home/>. Retrieved July 17, 2020, from <https://www.businesswire.com/: https://www.businesswire.com/news/home/20200605005438/en/3-MediaEntertainment-Industry-Trends-Driven-Impact>.

Family Firm Leadership: Establishing a Relationship between Familiness and Paternalistic Leadership

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Abstract: Our study reviews four concepts founder-entrepreneur, familiness, paternalism and paternalistic leadership. We contrast and integrate two major concepts of familiness and paternalism. The fallouts establish relationship between familiness and paternalism showcasing paternalistic leadership approach or style. Furthermore, we merge two models of type of capital and Filep's model to create a strategic resource model of specifics to founder-entrepreneur in family firm leadership. Finally, we discuss beneficial avenues for research.

Keywords: Founder-entrepreneur, Familiness, Paternalism & Paternalistic Leadership

INTRODUCTION

Brahmadev-the creator of universe not only originated human lives but also bestowed his knowledge, wisdom and continuity of human race. Likewise, a founder entrepreneur generates business idea, begins business and builds shared values amongst family members for the business continuity. As Selznick (1957) states, "family business entrepreneurs are unique in that they seek to build businesses that are also family institutions". Founder entrepreneur sweats in establishing and developing organization for building long-lasting family legacy with wealth creation.

Perpetuating the legacy must intergenerational to adapt leadership approach or style that founder entrepreneur has bestowed to family members. This is some phenomena; we need to study this phenomena of leadership approach or style. Subsequently, Entrepreneurship does ignore or pay little attention to family involvement. A founder represents family and family members are also the part of ownership, management and

control. This is another phenomenon that requires study. The answer lies in concepts of familiness and paternalistic leadership constructs.

Our study primarily focuses on questions, such as; (1) 1) How does family involvement and familiness relate founder entrepreneur? (2) Does paternalism exude next generation leaders? (3) How is familiness and paternalism linked together?

In order to seek answers we assess articles, concept and conceptual framework. The answer lies in gauging the two robust fields of entrepreneurship and family business. These two fields have primarily focused on the founder, family and business. In entrepreneurship literature, As Sharma (1996) states, “The founder encounters near the start and growth phases of the business while the family business literature meets the person near retirement”.

In conjunction to whatever these two fields have said. Prominence of founder and her/his congruence will never be ignored or neither be faded. Ostensibly, whether the founder is operable or gone what remains with the family to cherish are culture, values and leadership behaviour or style that next generation can follow and instill in successive generations. Supposedly, research had many tenets of founder- entrepreneur, out of many themes, Schein (1983), while conducting research on culture and leadership points, “The role of the founder becomes essential and is crucial because it is the founder of a firm who creates the organization’s culture and builds the basis for a sustainable leadership style”.

Our research does assume whether it is at the start, growth or retirement the founder entrepreneur’s leadership approach or style infuses adaptation, succession and continuity of business for generations. Considering this context, we draw attention of contributors, particularly with the concept of familiness and paternalistic leadership. Accordingly, we proceed with the contributors. Habberson et.al., (2003), has investigated “the positive side of family involvement by integrating the resource-based view (RBV) of the firm with system theory and equate as an interactive system composed of individuals, a family, and a firm”, thus have shaped the concept of ‘familiness’ Seemingly, the concept of ‘familiness’ strengthened by including social capital and new systems theory via decision premises that lead to development of the scale, ‘family Influence familiness scale’-(FIFS), (Frank, *et.al.*, 2017).

In short familiness is a holistic concept that considers including all the significant variables including ownership, management & control and transgenerational orientation. Under ownership, management & control, it indicates family members are the owners of the firm, as also they take great care that family members as in owners remain and manage their firm. Here family means founder, family members, and extended family members. Apparently, transgenerational orientation, does consists of points such as word of older generation as law, including taking great care that the ownership remains with the family.

These two variables best describe the founder and family members, thus, they act as autopoiesis, as an interactive system. Subsequently, paternalism draws an incitement connecting familiness. As stated by Pellegrini & Scandura, (2006) as “parental feature, mainly father figure, is one of the reasons why paternalistic leadership is still widely accepted leadership type in many parts of the world”.

With this article, we present the linkage between familiness and paternalism through merging two models of the types of capital within family firms and strategic resource model (Filep, 2012), thus creating a family specific strategic resource model.

Our paper proceeds as follows, First, we introduce topic followed by describing concepts of founder, familiness and paternalism & paternalistic leadership. Then, we present the linkage between familiness and paternalism, showcasing paternalistic leadership. This is followed by discussion, conclusion and avenues for further research.

THEORETICAL BACKGROUND

FOUNDER-ENTREPRENEUR

There are several definitions of family businesses that broadly has four dimensions; Degree of ownership and management, independent sub-systems, generational transfer and multiple conditions. Most definitions include variables of one or more family members. Likewise, as defined by Babicky (1987), “small business started by one or a few individuals who had an idea, worked hard to develop it, and achieved, usually with limited capital, growth while maintaining majority ownership of the enterprise”.

Another definition, according to Barnes & Hershon (1976), “states as a business in which controlling ownership rest in the hands of an individual or of the members of a single family”. In addition to above mentioned definition, the definition which consider independent sub-systems, according to Beckhard & Dyer (1983) “a business in which the subsystems include (1) the business as an entity, (2) the family as an entity, (3) the founder as an entity, and (4) such linking organizations as the board of directors”. In this definition, the founder confers as an entity.

Lately, considering the elements of definition being cited by (Beckhard & Dyer, 1983, p.6) under the independent sub-systems which included all the elements in the systems brought in the coinage of concept ‘Familiness’ (Habbershon and William, 1999).

FAMILINESS

Familiness is a holistic concept that includes systems and sub-systems apart from individual, family members and business. Familiness has become a talking point across the spectrum amongst the scholars in the family business research (Chua, Chrisman, & Sharma, 1999; Dawson, A. & Mussolino, D, 2014).

Familiness, as a concept was first familiarized by (Habbershon and William, 1999) by expressing as an idiosyncratic bundle of resources and capabilities through interaction

of family and, its members and the business systems. Essentially, included as a framework of the resource-based view (Weismeier-Sammer *et al.*, 2013). Furthermore, according to Arregle, *et. al.*, (2007). “familiness as a capital and system theory need to be looked from different theoretical lens”, thus, familiness as a concept brings in uniqueness and heterogeneity of family business (Nordqvist, M., Sharma, P., & Chirico, F, 2014).

Bearing in mind the above points, scholars agree that looking at the nature of heterogeneity, uniqueness and multiplicity of familiness. Establishing construct has become challenging and perplexing, however there are many empirical studies done on this concept but it does miss a measures of familiness, therefore the concept remains fuzzy (Irava & Moores, 2010). Because of this (Habberson and Williams, (1999) called for a quantitative examination of familiness. Due to the complex nature of concept heterogeneity it is essential to measure (Godfrey & Hill, 1995), Measuring can lead to an appropriate construct that can be used for further research (Pearson, Holt, & Carr, 2014, p. 551).

In view of this to address the measurement gap (Hermann frank, *et.al*, 2017) developed family influence familiness scale (FIFS), based on new systems theory, yet making the concept of familiness a holistic concept that considers including all the significant variables, the two most important amongst all are ownership, management & control and transgenerational orientation. These two variables best describe the founder and family members, thus, they act as autopoiesis, as an interactive system, consequently bringing in clarity in the confusion of this concept.

PATERNALISM AND PATERNALISTIC LEADERSHIP

Paternalism draws an incitement connecting familiness as Pellegrini, *et. al.*, (2006) and Aycan & *et al.*, (2001) states “founder as a parental feature, mainly father figure, is one of the reasons why paternalistic leadership is still widely accepted leadership type in many parts of the world”. Through paternalism, a leadership approach or style of paternalistic leadership is derived. The features that include in definition of paternalistic leadership as stated by Farh & Cheng, (2000), “strong discipline and authority with fatherly benevolence”.

It includes authoritarianism and benevolence, In addition to moral in paternalistic leadership. Another view Rivers, (2015), provides stating that in the recent research of paternalistic leadership in family firms. It has been divided into three types; Authoritarian, benevolent and moral.

Interestingly, many of the western scholars do not really agree of its applicability and relevance to the countries in Europe and United States of America. Apparently, paternalistic is prominent type of family business culture that shares relationship hierarchically through retaining all the key information and authority (Dyer, Jr., W.G, 1986). Though empirical studies found a high dominance of paternalistic

leadership approach or style in countries like India, Turkey, China and Pakistan (Pellegrini & Scandura, 2008).

Further, according to Gomez-Mejia, *et.al*, (2011), “leadership in family firms is different from that of other firms, given the emotional considerations of family firm leaders”. Apparently, scholars say- particularly in leadership of family business, probably may experience some specifics in family firm leadership behavior due to heterogeneity of paternalistic leadership behavior (Mussolino & Calabro. 2014). Seemingly, there has been many studies but it is imperative to see till date there are no enough proof of connection between the leadership styles and behaviours from theoretical perspective. However, some studies do specify particularly with respect to India that leadership approach or styles is predominantly paternalistic in family business.

LINKAGE BETWEEN FAMILINESS, PATERNALISM AND PATERNALISTIC LEADERSHIP

The linkage between the two begins with word “Resources” and familiness & paternalism are resources. As stated by Habbershon and Williams (1999). Furthermore, as “familiness is a unique combination of those resources that derive from the interrelated system of the family, family members and the enterprise”, thus provides competitive advantage to the family businesses.

Along with this clarity, Chrisman *et al*, (2003), brings in relevance to words “Competences” & “Ownership” by stating as “familiness as an interaction of the competencies, resources and commitment, which stems from family ownership”.

Another premise which acts as enabler is the performance. Success is through performance. Considering these as our sequence, we further ponder on the resources of family firms in terms of capital, see (table 1.).

Table 1: Types of Capital Within Family Firms

Author	Types of Capital Within Each Model	Focus
Filep (2012)	Human capital of family members Social Capital Survivability Patience Governance structures	Internal External Both Both Internal
Dyer (2010)	Human Capital Social Capital Financial Capital	Internal External Internal
Poza (2007)	Span of responsibility (of manager and owner) Ownership structure Market / customer focus Protection of family name and reputation Relationships between family, owners and management	Internal Internal Internal External External Internal

Supposedly, if we consider the basic resource based model, striving on sustainable competitive advantage, under skills and assets than we achieve core capability distinctions of leadership and capital. see (figure.1).

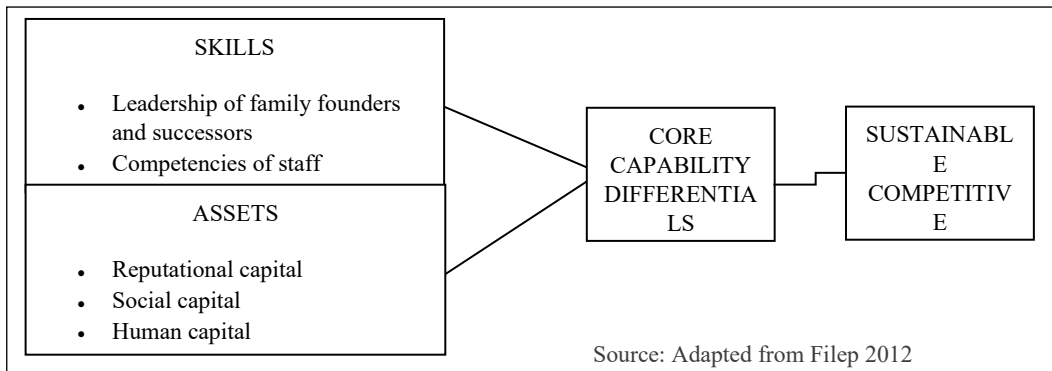


Fig. 1: A Strategic Resource Model of Sustainable Competitive Advantage in Family Firms

According to Filep (2012), “Skills consists of leadership of family founders and successors, well as assets comprise of reputational, social and human capital”. Presume if we distinguish capital within family firms. These two can be merged to create a strategic resource model for the specific family firms. Accordingly, we can consider that leadership styles based on the skills of the founder and successors, whilst familiness to the assets of the firm, which has aspects of reputational, social and human capital (Heidrich, *et.al*, 2018). Hence, this establishes the linkage with familiness, paternalism showcasing paternalistic leadership.

DISCUSSION

Our study primarily focuses on questions, such as; (1) How does the family involvement and familiness relate founder entrepreneur? (2) Does a paternalism exude next generation leaders? (3) How is familiness and paternalism linked together?

We reviewed several articles, concepts and conceptual framework of entrepreneurship, founder, family business, familiness, paternalism & paternalistic leadership. Literature shapes the founder encounters at the start and growth phases of the business while the family business meets the person near retirement Sharma, (1996). Most of the definition includes both one or family members in the business. Some also elaborate as a business in which controlling ownership is in the hands of an individual or of the members of a single family. Our research does assume whether it is at the start, growth or retirement the founder entrepreneur’s leadership approach or style, through paternalism, derives the paternalistic leadership approach or style that infuses adaptation, succession and continuity of business for generations. Considering this context, we answer the questions, first, 1) How does family involvement and familiness relate founder entrepreneur? Attention drawn from the contributors, particularly with

the concept of familiness by referring to the contribution made by Habberson *et.al.*, (2003), Through familiness we derive an interactive system composed of individuals, a family, and a firm. Precisely, two variables depict the essence of founder and family member are ownership, management & control and transgenerational orientation (Frank, *et.al.*, 2017).

The two most important variables derived are ownership, management & control and transgenerational orientation. These two variables best describe the founder and family members, thus, they act as autopoiesis, as an interactive system, consequently bringing in clarity in the confusion of this concept.

Second, (2) Does a paternalism exude next generation leaders? Paternalism draws an incitement connecting familiness as stated by Pellegrini, *et. al.*, (2006) and Aycan & *et al.*, (2001) as “founder as a parental feature, mainly father figure, is one of the reasons why paternalistic leadership is still widely accepted leadership type in many parts of the world”. Hence, through paternalism-paternalistic leadership has emerged. The characteristics of paternalism are authoritarianism, benevolence and moral Farh and Cheng, 2000). Through empirical we found a high dominance of paternalistic leadership approach in countries like India, Turkey, China and Pakistan (Pellegrini & Scandura, 2008). This shows paternalism do exist as a parent feature, Apparently, brings in relevance to paternalistic leadership approach or style.

Third, (3) How are familiness and paternalism linked together? The linkage between the two begins with word “Resources” and familiness & paternalism are resources. As stated by Habbershon and Williams (1999) as “familiness is a unique combination of those resources that derive from the interrelated system of the family, family members and the enterprise”, thus provides competitive advantage to the family businesses. Along with this clarity, Chrisman *et al.*, (2003), brings in relevance to words “Competences” & “Ownership” by stating as “familiness as an interaction of the competencies, resources and commitment, which stems from family ownership”. Another premise which acts as enabler is the performance. Considering types of capital and Filep’s (2012) model, we arrive at two models that emerges to create a strategic resource model for the specific family firms. According to Heidrich, *et.al.*, (2018). we consider that “leadership styles as relating to the skills of the founder and successors, whilst familiness relates to the assets of the firm as literature seems to indicate familiness has aspects relating to reputational, social and human capital”. Hence, this establishes the linkage with familiness and paternalism, showcasing paternalistic leadership approach or style.

CONCLUSION

Our study identifies linkage between familiness and paternalism through reviewing several articles, concepts and conceptual framework of entrepreneurship, founder, family business, familiness, paternalism & paternalistic leadership. We have discussed

in detail the concept of familiness and the relevance of founder, family and business in the interacting systems, majorly the variables of ownership, management & control (OMC) and transgenerational orientation (TGO). Paternalism does bring in parent features eventually, signifying the concept of paternalistic leadership of authoritarian, benevolent and moral. This kind leadership approach or style is already in use among the family firms in India. Furthermore, according to Gomez-Mejia, et.al, (2011), “leadership in family firms is different from that of other firms, given the emotional considerations of family firm leaders”. Apparently, scholars say- particularly in leadership of family business, probably may experience some specifics in family firm leadership behavior due to heterogeneity of paternalistic leadership behavior (Mussolino & Calabro. 2014). 2014). Lastly, the linkage between the two begins with word “Resources” and familiness & paternalism as resources including competences and Ownership. Consequently, through merging two models that are capital and Filep’s (2012). We establish the linkage with familiness and paternalism, showcasing paternalistic leadership approach or style

SCOPE FOR FURTHER RESEARCH

This study identifies scope for further research through conceptually and empirically. The idiosyncrasies in leadership in family firms does require clarity through unbundling the phenomena of leadership approach or style that are specific to family firms. Further studies can also be done considering paternalistic leadership approach or style as mediating variables between familiness and performance.

REFERENCES

- [1] Arregle, J.L., Hitt, M.A., Sirmon, D.G., & Very, P. (2007). The development of organizational social capital: Attributes of family firms. *Journal of Management Studies*, 44(1), 73–95.
- [2] Ashforth. B.E., & Mael. F.A. (1996), Organizational identity and strategy as a context for the individual. *Advances in Strategic Management* (vol.13). Greenwich, CT; JAI Press. Pp.17–62
- [3] Aycan, Z., Kanungo, R., Mendoca, M., Yu, K, DeOkker, J., Stahl, G., & Kurshid, A (2001). Impact of culture on human resource management practices: A 10-country comparison. *Applied Psychology*. 49(1), 192–221
- [4] Babicky, J. (1987). Consulting to the family business. *Journal of Management Consulting*, 3(4): 25–32.
- [5] Bass, B.M. (1985). *Leadership and Performance Beyond Expectation*. New York: Free Press.
- [6] Beckhard, R. & W.G. Dyer, Jr. (1983a). Managing change in the family firm — Issues and strategies. *Sloan Management Review*, 24(3): 59–65.
- [7] Bing, S. 2004. *Sun Tzu was a Sissy: Conquer Your Enemies, Promote Your Friends, and Wage the Real Art of War*. New York: HarperCollins
- [8] Chrisman, J.J., Chua, J & Sharma, P. (2003). Current trends and future directions in family business management studies: Toward a theory of the family firm, *Coleman White Paper series*.
- [9] Chrisman, J.J., Chua, J.H., & Sharma, P. (2005), Trends and directions in the development of a strategic management theory of the family firm. *Entrepreneurship Theory and Practice*, 29(5), 555–567.

- [10] Chua, J.H., Chrisman, J.J., & Sharma, P. (1999). Defining the family firm by behavior. *Entrepreneurship Theory and Practice*, 23(4), 19–39.
- [11] Davis J.A. (2008) Toward a Typology of Family Business Systems. In: Tàpies J., Ward J.L. Family Values and Value Creation. *A Family Business Publication*. Palgrave Macmillan, London. https://doi.org/10.1057/9780230594227_7
- [12] Dawson, A. & Mussolino, D. (2014). Exploring what makes family firms different: Discrete or overlapping constructs in the literature? *Journal of Family Business Strategy*, 5(2), 169–183.
- [13] Dr. Hermann Frank, Dr. Alexander Kessler, Dr. Thomas Rusch, Julia Suess-Reyes, Dr. Daniela Weismeier-Sammer Dyer, Jr. G. W. (1988). Culture and Continuity in Family Firms, The best of family business review, *Family Business Review*, 1(1), 18–24.
- [14] Dyer, Jr., W.G. (1986). *Cultural Change in Family Firms: Anticipating and Managing Business and Family Transitions*. San Francisco: Jossey-Bass.
- [15] Farh J.L., Cheng B.S. (2000) A Cultural Analysis of Paternalistic Leadership in Chinese Organizations. In: Li J.T., Tsui A.S., Weldon E. *Management and Organizations in the Chinese Context*. Palgrave Macmillan, London.
- [16] Frank, H., Kessler, A., Rusch, T., Reyes, S.J., Sammer, W.D (2017), Capturing the Familianness of Family Businesses: Development of the Family Influence Familianness Scale (FIFS). *Entrepreneurship Theory and Practice*, 41(5), 709–742.
- [17] Frank, H., Kessler, A., Rusch, T., Reyes, S.J., & Sammer, W.D. (2017). Capturing the Familianness of Family Businesses: Development of the Family Influence Familianness Scale (FIFS). *Entrepreneurship Theory and Practice*, vol. 41, 5: pp. 709–742.
- [18] Gioia, D.A., & Corley, K.G. (2000), Organizational identity, Image and adaptive instability. *Academy of Management Review*, 25(1), 63–81
- [19] Godfrey, C.P., & Hill, W.C (1995), The problem of unobservables in strategic management research. *Strategic Management Journal*, 16(7), 519–533.
- [20] Habbershon, T.G. (2006). Commentary: A Framework for Managing the Familianness and agency advantages in family firms. *Entrepreneurship Theory & Practice*, 30(6), 879–886.
- [21] Habbershon, T.G., & Williams, M. (1999). A resource-based framework for assessing the strategic advantage of family firms. *Family Business Review*, 12, 1–25.
- [22] Heidrich, B., Nemeth, K., & Chandler, N. (2018) Protect and Be Served? - The Revival of Paternalistic Leadership in the Light of Family Businesses, *Logisztika Informatika Menedzsment*, 3(1), 5–20.
- [23] Hollander, B.S., & N.S. Elman (1988). Family-owned businesses: An emerging field of inquiry. *Family Business Review*, 1(2), 145–164.
- [24] Holt, T.D., Pearson, W.A., Carr, C.J., & Barnett, T, Family Firm(s) Outcomes Model: Structuring Financial and Nonfinancial Outcomes Across the Family and Firm. *Family Business Review*, 30(2) 182–202.
- [25] Irava, W., & Moores, K. (2010). Clarifying the Strategic Advantage of Familianness: Unbundling Its Dimensions and Highlighting Its Paradoxes. *Journal of Family Business Strategy*, 1(3), 131–144
- [26] Mejia, G.R.L., Cruz, C., Berrone, P., & De Castro, O.J, The Bind That Ties: Socioemotional Wealth Preservation in Family Firms. *The Academy of Management Annals* 5(1):653–707
- [27] Mussolino, D & Calabrò, A. (2014). “Paternalistic leadership in family firms: Types and implications for intergenerational succession,” *Journal of Family Business Strategy*, Elsevier, vol. 5(2), pages 197–

210.

- [28] Nag, R., Corley, K.G., & Gioia, D.A (2007), The intersection of organizational identity knowledge, and practice: Attempting strategic change via knowledge grafting, *Academic of Management Journal*, 50(4), 821–847.
- [29] Nordqvist, M., Sharma, P., & Chirico, F. (2014). Family firm heterogeneity and governance: A configuration approach. *Journal of Small Business Management*, 52(2), 192–209.
- [30] Pearson, A. W., Holt, D. T., & Carr, J. C. (2014). Scales in family business studies. In L. Melin, M. Nordqvist, & P. Sharma (Eds.), *The Sage handbook of family business* (pp. 551– 572). London, England: Sage Publications.
- [31] Pearson. A. W., Carr, J.C., & Shaw, J.C. (2008), Toward a theory of familiness: A social capital perspective. *Entrepreneurship Theory and Practice*, 32(6). 949–969
- [32] Pellegrini, E. K., & Scandura, T. A. (2006). Leader–member exchange (LMX), paternalism, and delegation in the Turkish business culture: An empirical investigation. *Journal of International Business Studies*, 37(2), 264–279.
- [33] Pellegrini, E. K., & Scandura, T. A. (2008). Paternalistic Leadership: A review and agenda for future research. *Journal of Management*, 34(3), 566–593.
- [34] Ravasi, D., & Schultz, M. (2006). Responding to organizational identity threats: Exploring the role of organizational culture. *Academy of Management Journal*. 49(3), 433–458
- [35] Rivers, N.M. (2015). A Review of autocratic, paternalistic, and charismatic leadership in three collectivist cultures. *Emerging Leadership Journeys*, Regent University.
- [36] Schein, E. H. (1983). The role of the founder in creating organizational culture. *Organizational Dynamics*, 12(1), 13–28.
- [37] Schein, E. H. (1999). Sense and nonsense about culture and climate, Working papers WP 4091–99., *Massachusetts Institute of Technology (MIT), Sloan School of Management*. Selznick, P. (1957) Leadership in Administration: A Sociological Interpretation. *Harper & Row, New York*, 62, 67–68.
- [38] Sharma, P. (1996). A review and annotated bibliography of family business studies, *Kluwer Academic publishers*.
- [39] Sorenson, L.R. (2002), The Contribution of Leadership Style and Practices to Family and Business Success, *Family Business Review* 13(3):183–200
- [40] Steier, L (2003), Variants of agency contracts in family financed ventures as a continuum of familial altruistic and market rationalities, *Journal of Business Venturing*, 18. 597–618
- [41] Weismeier-Sammer, D., Frank, H., & von Schlippe, A. (2013). Untangling “familiness”: A literature review and directions for future research, *International Journal for Entrepreneurship and Innovation*, 14(3), 165–177.
- [42] Westhead, P., & Haworth, C. (2007), Types of private family firm: An exploratory conceptual and empirical analysis. *Entrepreneurship and Regional Development*, 19. 405431.
- [43] Whetten, D., & Mackey, A. (2002). A social actor conception of organizational identity and its implications for the study of organizational reputation. *Business and Society*. 41(4), 393–415.

Success and Operative Factors for Technology Business Incubations in Indian Higher Educational Institutes

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Abstract:

Purpose: There are limited studies which contribute to performance measurement of Technology Business Incubators (TBIs). The present study not only identifies factors which play decisive role in measuring performance of TBIs but also proposes practice oriented operational factors which will help TBI management in developing related policies.

Design/methodology/approach: 23 crucial factors directly responsible for performance of TBIs were identified through extensive literature review. Focussed Group Discussions (FGD) followed by semi structured interviews were conducted for developing corresponding operational factors.

Findings: There is no literature available which can link Success Factors (SFs) of TBI with corresponding Operational Factors (OFs). The present study provides a link between SF for TBIs and corresponding OFs.

Originality/value: The present study provides a ready to go set of OFs, which have not been provided in any of the literature on TBIs. These OF will not only provide a pathway for TBIs as to how to achieve strategic goals but also to motivate them to develop their own set of customised OFs.

Research limitations/implications: A case on practical application of these OFs could have been included which is the limitation of this study.

Keywords: Technology Business Incubator, Success Factors, Operative Factors Higher Educational Institutes, Focussed Group Discussions, India

INTRODUCTION

With a view to promote the culture of startup, encourage entrepreneurship and stimulate young entrepreneurial mind, the All India Council for Technical Education (AICTE) has made it mandatory for all technical institutes including engineering colleges and universities in India to set up incubation centres in their premises. This marks the importance of incubators and incubation process in Indian Higher

Educational Institutes. Technology Business incubation is a new tool for promoting entrepreneurship in India. As such studies corresponding to enhancing performance of TBIs and operative or operational factors are very much paramount. TBIs or the University Business Incubators (UBI), as the name specifies, are the incubators run and managed by universities and institutes in their vicinities, which provide the young under graduates, post graduates and faculty members to feel the true spirit of entrepreneurship by establishing their firms inside the premises. The conducive environment provided by TBIs includes various services like mentoring, legal aid, office space, lab facilities, networking etc. which helps to increase the rate of survival, reduces knowledge gap (Lalkala 2006) and allows them to graduate as self-sustainable firms which can sustain in highly competitive business world. TBIs are novel approach for economic development and promotion of innovative entrepreneurship. Various frameworks of TBIs, which are centre of attraction for new ventures and are popular worldwide and are growing as focus of innovative, techno- entrepreneurial activities include technology incubators, science parks, accelerators etc. (Wadid Lamine et.al 2016). TBIs mainly focus on promotion of technology concentrated enterprises and knowledge-based ventures (Adelowo Caleb M et.al 2012). TBIs can be considered as mechanism that create supportive, entrepreneurial environments for technology oriented start-ups providing enhanced chances of survival (Nisakorn Somsuk, 2012). TBIs progressively generate regional integration and provide enriched value added services from tenant mentoring to integrated living (Mian 2016). Major challenges faced by TBIs is to get novel ideas from enthusiastic prospective incubatees which can be turned into product or service and is readily accepted by society and as such the firm, the incubator and society is benefitted in whole. The challenge for TBI is to identify the weak and strong points in it. The ideal strategy should be to capitalise on strong and fill the weak spot. The literature on Business Incubation has identified various key success factors which include selection process for tenants, clear policies and procedures (Smilor 1987) number of businesses graduated over a period of time, the number of businesses still in business over a period of time, jobs created by incubator clients, salaries paid by incubator clients (Mubarki et.al. 2013), Screening process Meeting goals and objectives. But the literature on TBIs or academic incubator lacks studies which can contribute towards operational factors. The present study proposes more than 100 operational or operative factors and sub factors which

METHODOLOGY

Various papers which have been used for measuring performance of BIs from the year 1990 to 2020 from two online databases i.e. Google scholar and Scopus were identified. The key words used include—Performance indicators for Business Incubators—Performance indicators for Technology Business Incubators—Business incubator performancell,—Business incubator efficiency—incubator effectivenessll or

—incubator efficiency, —incubator impact, combination with—measure, —system, —framework or—framework. In all 39 papers having multiple as well as single set of performance indicators, which suited our work were identified. The KPIs were then divided according to the stages of incubation process (Pre incubation, incubation, graduation and post-graduation). The factors so identified were again filtered and were arranged related to actions and tasks, decisions taken by incubator management during various stages of incubator. Factors were then discussed in detail in FGDs followed by semi structured interviews with incubator management, academicians. With the help of identified indicators from the literature, detailed question sets were prepared on the operational viability of these indicators. The OPIs for each identified strategic performance indicator were prepared by the answers provided during discussion, interviews and literature review. The OPIs were prepared and were sent to the participants for their feedback. Their feedbacks were incorporated and OPIs were again sent to the participants. The final OPIs and SIs were sent to incubators for validation. The diagrammatic representation of methodology is provided in fig 1.

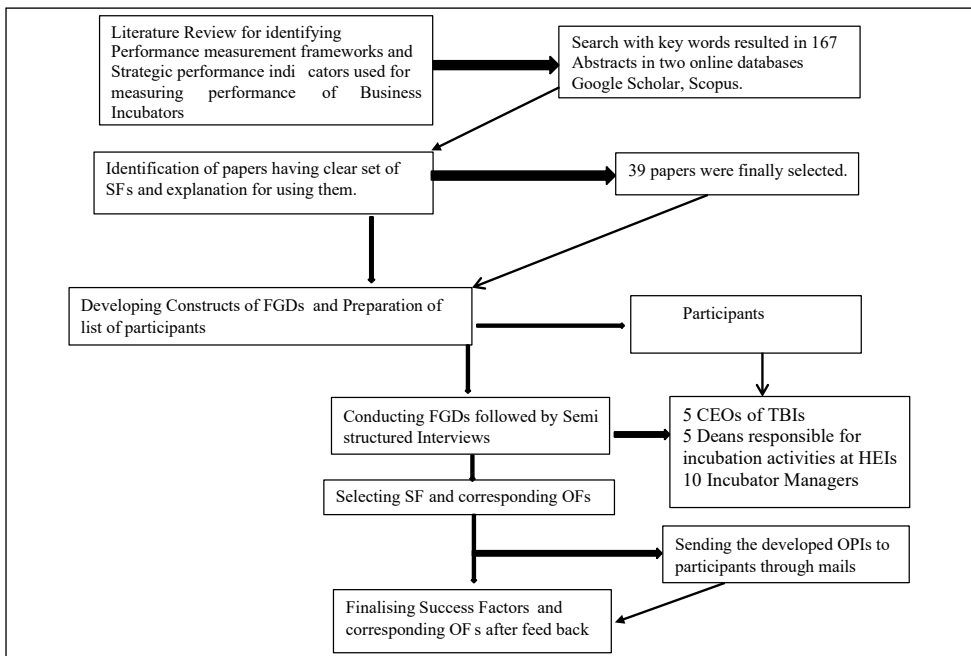


Fig. 1 : Flow Chart of Methodology

LIST OF IDENTIFIED FACTORS FROM LITERATURE

In all 23 Strategic performance Indicators were identified from literature. These SPIs have been used by authors in their studies as major tool for measuring effectiveness of Business Incubation Process (BIP). The list of identified SPIs along with the authors who have used them in their studies and year of incorporation have been listed in the table below.

Table 1: Success Factors and Authors Identified from Literature

S.No	Identified Success Factors	Authors and Year of Study
1	Screening process	Udell (1990), Allen and McCluskey (1990) Weinberg et al. (1991), Markley and McNamara (1996), Lalkaka and Bishop (1996), Fidelis A (2017), McAdam and Marlow (2007), Barbero et al.(2012), NBIA Anniversary Survey(1996), Adegbite (2001) Mian (1996-97) Philips (2000) Shefer and Frenkel (2002), Headd, (2003), Rothaermel and Thursby (2005) Lindelof et.al (2002), Aernoudt (2004), Hackett & Dils Phan et al. (2005) Hanadi Mubarak Al-Mubarak et al (2011), (2012a), Schwartz,M Shaffer (1999), Al-Mubarak and Schrödl (2012b),Li Xiao (2016), Jong-Wen Wann et al (2017), Al-Mubarki and Busler Vanderstraeten et al. 2011 (2012) Seeger (1997), The National Business Incubator Association (1997), Chan et al.(2005), Bears (1998), Jong-Wen Wann et al (2017), Selma R (2016), Marcin Olkiewicz et al. (2018)
2	Meeting goals and objectives	
3	Finishing a business plan	
4	Starting production	
5	Reaching break even	
6	Firm survival Rate Tenant and graduate)	
7	Turnover, Turnover Growth (2004)	
8	Employment and Employment growth	
	Number of Companies graduated	
10	Number of Clients Served	
11	Tenant Revenues	
12	Profitability	
13	Graduates remaining in community	
14	Financial performance at the time of incubator exit	
15	Occupancy Rate/percentage occupancy rate	
16	Funding received	
17	Impact on university's prestige/public image Media coverage	
18	Completing a prototype	
19	Positive Networking advantages	
20	Geographic proximity	
21	IP Generated	
22	Space of Incubator	
23	Establishing a business	

SUCCESS AND OPERATIVE FACTORS

The OFs were developed keeping in mind the scope of related SFs. The major difference between SFs and OFs is that SFs are used to measure effectiveness of TBI in long run. They can't be looked upon and modified each and every day, whereas OFs are developed keeping in mind the day to day working of a TBI. They can be customised depending upon the expected output and available resources. Limited number of Success factors have been used in this study.

GOALS AND OBJECTIVES OF THE TBIs

One of the primary strategic indicator for measuring success of business incubators is how much from the set goals have been achieved and how much is yet to be achieved. This may give a direction to incubator management for future course of action . Mubarki *et al.* (2013), on goals of incubator stated that, clear incubator goals

can increase the rate of graduation companies from incubation programmes. This indicates that goals and objectives of BIs are amongst the prominent PIs for measuring performance of TBIs. Bearse (1998) had outlined that the common evaluation basis for evaluating the incubators is level of achievement of goals and objectives. Achieving goals can be the benchmark of the incubator. Anna Bergek et.al (2008) are of the opinion that incubators differ from each other because their goals are different or in case goals match, priorities may be different and when priorities are different, methodology to attain their respective goals will also be distinct. The developed OPIs and corresponding

**Table 2: Operational Factors and Applicability of OFs for Achieving
Goals and Objectives of the TBIs**

S. No	Operational Factors	Applicability of OFs
1	Goals of Incubation should be in agreement with promoting spirit of entrepreneurship among young technocrats	a. Understanding mind set of first year students b. Developing Programs accordingly c. The Ease of processing and availability of incubatee related documents like • Business plan • Certificate of incorporation • Memorandum & Articles of Association • Incubation Agreement • Seed-Fund Agreement • Technology Commercialization Agreement • Special requirements for companies in the area of pharma and Biotech • Should be periodically assessed and updated. There should be clear guidelines. d. Sustainable Entry/ evaluation criterion and exit criterion for incubatees e. Availability of seed Funding. f. Level of investors involved. g. Expectations of investors. h. How to maximise use of Period of Incubation/ Tenancy period i. Ownership of IP and IP Management
2	Incubation / entrepreneurship Policy of HI should be in confirmation with the IP and Incubation policy of Incubator	a. Supportive and complimentary level of various policies of Incubator b. Separate policy for faculty incubatee c. Enhancing Technology transfer
3	Major outcome of the policies of BIs In terms of	a. Promotion of entrepreneurial mind-set at Institutional level. b. Promotion of entrepreneurial culture at regional level c. Promotion of indigenous and sustainable technology at International platform d. Incubatee development (Individual level) e. Regional Development (Regional Level) f. Contribution towards country (National Level) g. Enhancing Technology Transfer
4	Revision of Incubator Policy?	Is the revision of incubator policy at both levels, HI or TBIs Periodic or is revised as and when required? a. Average revisions made in the policy in last 5-10 years b. Outcome of the revisions c. Basis for revision
5	IPR policy of the Institute	a. Is the IPR policy of HI supportive and complimentary of Incubator's IP Policy? b. Are the roles of Host Institute, Incubator staff, incubatees clearly differentiated and mentioned regarding IP generation and Management?

Table 2 (Contd.)...

...Table 2 (Contd.)

6	Is the awareness level high enough to reach to maximum audience and is able to get increased number of participation?	a. Are the state of art strategies being used by TBIs for creating awareness about the objectives and functioning of TBIs b. Are the response rate being measured at pre-defined specific time c. level of hurdles in promoting culture of entrepreneurship. d. Expectation of Government and
7	Does the process involves progression Check and rectification at each stage and cycle?	a. Are the flaws being identified through checks same every time? b. Are rectification being carried out on time? c. Are suggestions invited from experts out of Host Institute? d. Level of rectification needed e. financial
8	Do the prospective incubatees are well aware about the culture at Host TBIs	a. If the idea is accepted can and will the prospective incubatees survive the novel, competitie and dynamic culture of TBIs b. Are the expectations of incubatees fall within the gambit of TBIs? c. Do incubatees need a counselling session to understand input and output of TBIs?
9	Are the geographic proximity of HI and TBI supportive of Goals and policies?	a. Is data on supportive or non-supportive nature of geographic location available? b. Is incubator ready to relocate in case geographic proximity is not supportive of incubator goals c. Alternate location and resource allocation available? d. Possibility of Virtual incubation available?

INCUBATOR'S PREPAREDNESS FOR ASSESSING INCUBATEE READINESS

Amongst all categories of incubators, university incubators provide the most wide-ranging set of resources to firms (Vernet Lasrado *et.al* 2015). Udell (1990) is of the opinion that establishing a business by the incubatees is a much better and effective progress measuring indicator for measuring the progress of a BI rather than traditional measures of measuring progress. Traditional measures of business performance are often, ineffective measurement tools, the impact of incentives on small business and entrepreneurial performance are to be evaluated. TBIs during the screening and review process, should be able to analyse various factors which are foremost in establishing a business of incubatees.

Table 3: Operational Factors and Application of OFs for Establishing a Business by Graduate Companies and Incubator's Preparedness for that

S.No	Operational Factors	Applicability of OFs
1	Incubatees Initial readiness for establishing business	a. Has the incubatee already done SWOT analysis of his proposed business? b. If not, how long would it take to do so? c. Can his/her idea be included d. Has the SWOT analysis backed by expert opinion e. Exploration of SWOT analysis , identification of bottlenecks f. Relative degree of successfulness of the business g. Rectification measures h. effectiveness of rectification measures
2	Does incubator agree with the perspectives, vision of incubatee towards establishment of business	a. Benchmark for the suggestion being made to prospective incubatees/incubates b. If incubator does not agree what are the identified areas c. Survivability of prospective incubatee's idea
3	Suggestion and guidance from the incubator towards making new companies	a. Uniqueness

SUCCESS STORIES IN HAND (SSH)

Mian (1997) in his paper titled —Assessing and Managing the University Technology Business Incubator: An integrative Framework, has identified various factors for assessment of the TBIs/UBIs. One of them is about impact on university's prestige/public image (media coverage) The performance of TBI will directly reflect on the host institute's performance in achieving its goals. A separate factor Success stories in hand (SSH)' was agreed upon and corresponding check list for this was developed with the help of experts and literature available on performance of Business Incubators.

**Table 4: Operational Factors and Application of OFs
Success Stories in Hand**

S. No	Operational Factors	Applicability of OFs
1	Number of Lead generation programs organised in last financial years	a. Number of productathons and Hackathons conducted b. Number of Boot camps conducted c. Number of accelerators and d. Evaluation of Outcome of the Lead generation programs and change in strategy e. Intensity of the programs conducted (Local, Regional, National, overseas)
2	Number of Summits organised for Investors, various funding and other agencies	a. Number of Investors convinced in a financial year for providing funding to TBIs b. Seed Funding provided by investors to start-ups and incubators c. Past performance record of investors.
3	Number of ideas screened in last couple of year?	a. Categorisation of ideas based on the novelty and product design b. Listing of ideas which attained maximum success c. Categorisation of ideas which failed in various stages.
4	Number of Ideas successfully converted into products and services	a. Ratio of ideas screened to total number of incoming ideas in the financial year. b. Ideas which failed initially did they return to incubator again?
5	Number of counselling session or workshops conducted for ideas which can't get through the initial screening process.	a. Number of participants in counselling sessions b. Output of Counselling sessions And terms to measure them. c. Intensity and frequency of counselling sessions
6	Number of ideas taken back again into cycle after initial rejection	a. Are the ideas taken back came after Incubator's effort? b. Ratio of number of Ideas taken back into cycle to the number of rejected ideas
7	Number of incubatees and graduate companies	a. Survivability rate of incubatees b. Average rate of graduation c. Employment created by graduate companies d. Valuation of graduate companies
8	Number of funding partners/ Angel Investors	a. Are terms and conditions for receiving funding easy and workable? b. Negotiating conditions c. Intensity of funding
9	Name, Number and achievement of Big Start-ups, incubated from host incubators	a. Is Categorisation of successful start-ups available? b. Basis for categorisation? c. Indicators chosen for categorisation.
10	TBIs alumni network	a. Ratio of Total Number of alumni to the number of alumni in network b. Facilities provided by Incubator towards Alumni c. Support provided by Alumni d. Categorisation of Alumni on the basis of support provided by them

Table 4 (Contd.)...

Table 4 (Contd.)...

11	State of the art equipment and Mentors	a. Availability of labs b. Availability of In house Mentors c. Number of Man hours mentors are ready to provide d. Ratio of mentor and mentee
12	Place in Ranking (If any)	a. Is there any ranking available? b. Parameters for those ranking
13	Feed Back and its Effectiveness	a. Audience for feed Back b. Assessment of Feed Back c. Identification and categorisation of repetitive problems d. Effectiveness of Corrective Actions
14	Pattern of idea flow after workshop and training programs	a. Quality and level of idea flow b. Number of ideas accepted
15	List of innovative products and services which have been developed by incubatees	a. Change the products and services have brought in society b. Level of recognition they have received in society

READINESS OF HAND BOOK ON BAD AND GOOD DECISIONS TAKEN BY INCUBATOR/ INCUBATEE

A hand book to guide and apprise new incubatees in the very beginning of incubation process about various bad decisions taken in the incubation process so that bad decision making based on past decisions is reduced. The decision making is an inevitable part of any process. Certain decisions are so good that they turn the fortune of whole system and process. The incubator management should have a ready hand book on Good and bad decisions being made in the journey of incubation. Various reasons, actors involved, impact all should be ready with incubator for reference. Decisions, taken by incubatees should be recorded and made available to new incubatees along with its impact. Future scope should be analysed and added.

Table 5: Operational Factors and Application of Operational Factors for Decision Making

S.No.	Operational Factors	How to Apply OF
1	Number of Bad Decisions Taken in every financial year By Incubators.	a. Is there a standard set for categorising decisions into good and bad? If yes what are the variables? b. Analysis and categorisation of Decisions into • Routine and strategic decisions • Tactical (Policy) and operational decisions c. Was decision based on studied data or gut feeling? d. Listing of bad decisions on ineffective data and gut feeling
2	Number of Bad Decisions Taken by Incubatees.	a. Type of incubatees (level of which took bad decisions b. Stages at which maximum bad decisioning occurred c. impact of bad decisioning on • Incubator • HEI • Incubatees d. Any particular reason for bad decision e. Effectiveness of Corrective Actions taken

Table 5 (Contd.)...

3	Number of Good Decisions Taken in every financial year By Incubators and incubatees	a. Impact of Good decision making on • Incubator • HEI • Incubatees b. Identification and listing of good decisions highlighting role of decision makers
4	Number of Decisions affected by external actors	a. Impact assessment b. Corrective actions c. Change in policies accordingly
5	Time taken to finalise ideas.	Is there availability of screening policy? a. Categorising Ideas which took minimum time b. Idea with maximum time c. Identifying and listing of reasons for delay in process d. Regulating efforts
6	Potency of the product idea in terms of its technical content, innovativeness, suitability and market sustainability	a. Is the documentation of Level of innovation expected as final outcome and level of efforts needed to take idea to that level properly made? b. Availability and status of state of the art work on idea proposed c. Number of start-ups working on same or similar type of concept? d. Innovativeness of the idea? e. Will the developed product be able to make its place after 3-4 years? Will the technology not become obsolete? Will it need other features to comply needs and expectations f. Is the market ready to accept idea g. Will the incubator able to fulfil need of incubatee as related to idea
7	Work experience and profile of the incubatees	a. Are the incubatees competent enough for the idea they are proposing? b. Are the roles of company executive well arranged? c. Level of Market survey been done
8	Intellectual Property generated and the potential of the idea for IP creation	a. Is the development of product supported by IP? b. Is the incubatee well versed with the process of technology transfer? c. Does the already developed IP falls in the ambit of incubator? d. Status of IP? Would it be licence or some other form
9	Commercial and Financial viability of idea with 5-10 year projection	a. Trend of market for proposed product? b. Would the product survive with same features or it needs additional feature once it reaches market? c. Each Company's value projection in the next 5-10 years
10	Funds requirement and viability of raising finance	a. Investor's interest in the product? b. Medium through which support funds will be raised
11	Time in which product/services will reach market	a. Plan in which incubatee company will leave the incubator and enter market
12	Commercial potential demand and requirement in India	a. Availability of data and statistics on present as well as future supply and demand of the product in country
13	Scalability	a. Clarity in Market Focus b. Repeatability of Solutions c. Degree of Market Differentiation d. Sales and market integration

PHYSICAL ASPECTS OF THE TBIs

Most incubators have rental income as primary source to cover their operational costs. This always creates a dilemma as to what has to be the operating space which can be provided to incubatees. Working space in case of Business incubators are referred to as common shared space rented by TBIs to incubatees for setting their offices. The rent and other charges should be such that both incubators and incubatees are neither at profit nor at loss. Working space should be such that it full fills the needs of the incubatees and provide them a cosy atmosphere for performing well. The concept of business incubators originated with the idea of sharing resources to maximise the profit and output. But the resources are to be judicially managed so as to satisfy the needs of incubatees. Proper planning strict guidelines are to be followed in case limited resources are to be used in most effective (Lalkaka, 2002) has identified availability of Smart work space as one of the measure of performance measurement and efficient manner

Table 6: Operational Factors and Application of Operational Factors for Physical Aspects of TBIs

S.No	Operational Factors	Application of Operative Factors
1	Does the TBI have enough space to accommodate several incubatees at one time?	a. Basis on which working space has been calculated? b. Is there a need to increase working area required? c. List of suggestions or feedback from incubatees on space and related area. d. Feasibility of virtual incubation in case space is not adequate?
2	Ratio of Working Space in sq m to the number of incubatee	a. Feasibility of two shifts for incubatees? companies
3	Common Infrastructure	a. Does the common infrastructure shared is enough to address the need of incubatees b. Are the charges decided by Host Institute for various facilities like • Rent for space • Computers and internet • Electricity, photocopier • Telephone, mentorship payable by the incubatees? c. Employees assigned for maintenance of equipment's
4	Institute Infrastructure	a. Is there a well organised policy for infrastructure sharing? b. Are the conditions laid down in Institute Policy for sharing institute infrastructure amongst incubatees and students? c. Are institute resources judicially shared amongst the incubatees and non incubatees? d. Are the resources updated on regular basis?
5	Consulting and Administrative Assistance	a. Availability of consulting staff b. Availability of administrative assistance c. Feed Back regarding consulting and administrative services and staff

FAILURE RATE OF TBIs

The primary objective of TBIs is to minimise the failure rates of incubatees and provide a conducive environment which can boost the survival of the incubatees in their entrepreneurial life. During various studies on incubators, success rate of incubatees

(graduation) has been considered as one of the factor for evaluating the progress of BIs. Failure rate of start-ups should be the major concern of incubator management. Failure rates of incubatees are the rates which every incubator and incubatee wants to reduce. Screening process should be such that ideas with low or less possibility of surviving should be allowed to pass through without providing suitable suggestions.

**Table 7: Operational Factors and Application of Operational
Factors for Failure of TBIs**

S.No	Operational Factors	Application of OFs
1	Analysis and categorisation of reason of failure of start-ups	a. Stages of Failure – Which stage has the maximum and minimum failure rate b. Poor idea selection Product/service c. Ineffective mentoring d. Lack of Funds e. Lack of Innovativeness f. Operational Blip g. Failure due to Promotional failure h. Failure due to ineffective i. Failure due to peer pressure j. Failure due to social insecurity amongst incubatees k. Failure due to family pressure l. Failure due to feeling of career insecurity m. Failure due to erroneous SWOT analysis of situation n. Analysis of the product which has been developed before failure o. Performance of incubatee taken back after failure p. Cost incurred on taking back failed incubates q. Effect on fresh incubatees
2	TBI's readiness to accept failed incubatee again?	a. Policy perspective b. Motivational Factors c. Ratio of Such Incubatees

ROLE OF FAMILIES IN MOTIVATING/DEMOTIVATING INCUBATEES TO CONTINUE CARRIER IN ENTREPRENEURSHIP

This is one of the parameter which needs to be worked upon in Indian scenario. Indian families play a crucial role in deciding career of their children and as such students are influenced a lot by the thought process of their family members. Entrepreneurship though rewarding needs a lot of efforts and persistence and patience compared to Job. It is easy for a under graduate to grab a job rather than pursue entrepreneurship while he is graduating from institute. But if families are in support of their children to pursue entrepreneurship as carrier, there would certainly be rise in sustainable entrepreneurship in the country. The current mind set of technocrats to take up a job in foreign country and lead a leisure life will change to be an entrepreneur and contribute significantly in country's economy by providing jobs and revenue. The incubators should have a brief history of incubates family, should have regular meetings with incubatees and their families should apprise them about the success which start-ups are achieving, role of TBIs in doing so etc.

OPERATIONAL FACTORS AND APPLICATION OF OPERATIONAL FACTORS FOR ROLE OF FAMILIES IN MOTIVATING/DEMOTIVATING INCUBATEES TO CONTINUE CARRIER IN ENTREPRENEURSHIP

Table 8

S.No	Operational Factors	Application of OFs
1	Brief study on family background of incubatee startups	a. Past study on the Progress and performance of incubatees whose Family is supportive of their decisions b. Families who have not been supportive of decisions c. Does families need counselling d. Number of counselling sessions done e. Outcome of counselling sessions
2	Is family ready to help incubator	a. Through networking b. Angel investor c. Mentorship d. Legal or other help
3	How does family react to failure of start-ups and their opinion about entrepreneurship as a career	a. What was their initial opinion when their ward chose to incubation? b. How Would they motivate their wards?

RETURN (EXPECTED) TO BUSINESS INCUBATORS

Returns can be in many form, the broader categorisation of returns to incubators can be divided into equity and shareholding, revenue earned, good will, role of graduate firms as angel investors or some other role etc. The life span of a TBI directly depends on the returns its getting over a period of time. TBIs should have an effective and operative policy for deciding equity and shares. The TBIs should rely on first-hand information about what would be more beneficial for incubator, the stocks or similar safeties that are fully paid for or warrants and other prevalent options which are a right to later purchase later, ratio of average annual income as equity and shares to number of graduate and post graduate companies in an year, role of mentor in equity sharing, Profit sharing in case company winds up, legal options available in case contract is not kept by incubatees.

OPERATIONAL FACTORS AND APPLICATION OF OPERATIONAL FACTORS FOR RETURN TO TBIs

Table 9

S.No.	Operational Factors	Application of OFs
1	Equity and Shareholding	a. Basis for deciding equity and share policy? b. What would be more beneficial for incubator, Stocks or similar safeties that are fully paid for or Warrants and other prevalent options which are a right to later purchase later? c. Ratio of average annual income as equity and shares to number of graduate and post graduate companies in an year d) d. Role of mentor in equity sharing e. Profit sharing in case company winds up f. Legal options available in case contract is not kept by incubatees

Table 9 (Contd.)...

...Table 9 (Contd.)

2	Revenues Earned	a. Revenues as rent b. Revenue as consultancy
3	GoodWill	a. List of start-ups who have brought good name to incubators. b. Role Good will playing to attract potential funding agencies c. Networking with incubators who are doing good in entrepreneurial life and Angel investors generated through Networking d. Is good will playing role in getting rebates from Government authorities
4	Role of graduate firms as Angel investors or some other	Aggressive strategy for pursuance of successful start-ups to be angel investors or adopting some other role.

CONCLUSION AND FUTURE IMPLICATIONS

Literature available on effectiveness of Business Incubation has identified various performance indicators for measuring effectiveness of BIP. The available literature on BIP does not provide operational performance indicators which are crucial for witnessing effective completion of each process. The present study resulted in OPIs for 12 strategic Performance Indicators which were identified from literature review and formulated during interviews. Proposed OPIs are developed keeping in mind the present situation of TBIs in India. Most of TBIs struggle to get enough and quality participation from its students due to different mind-set of the technocrats. The developed

OPI Role of families in developing entrepreneurial culture‘ will definitely help TBIs minimising the after effect of this. Likewise the OPIs for Handbook on good and bad decisions‘ will allow

TBIs as well as incubatees on their toes to take decision wisely. The incubator management at TBIs can adopt the best suitable set of OPIs and as such can develop customised set of OPIs according to their need

LIMITATIONS OF THE STUDY

OFs can be tested in TBI for practical application.

Note: Questionnaire available on request. Out of 23 SF only eight have been elaborated in this study due to limitations of word limit.

REFERENCES

- [1] Adegbite, O (2001), Business Incubators and Small Enterprise Development: The Nigerian Experience, *Small Business Economics*.
- [2] Adelowo Caleb M. Olaopa R.O., Siyanbola W.O. (2012) —Technology Business Incubation as Strategy for SME Development: How Far, How Well in Nigeria?, *Science and Technology*, Vol. 2 No. 6 pp. 172–181. Doi: 10.5923/j.scit.20120206.06.
- [3] Allen and McCluskey, (1990) Structure, Policy, Services, and Performance in the Business Incubator Industry, *Entrepreneurship Theory and Practice*.

- [4] Anna Bergek, Charlotte Norrman, (2008), Incubator Best Practice: A framework, 2008, *Technovation*
- [5] Bearse. P (1998) A Question of Evaluation: NBIA's Impact Assessment of Business Incubators, *Economic Development Quarterly*
- [6] Chan *et.al.* (2005) Assessing technology incubator programs in the science park: the good, the bad and the ugly, *Technovation*
- [7] European Commission (2002), Benchmarking of Business Incubators *Final Report on Bench Marking of Business Incubators*, European Commission Enterprise Directorate General
- [8] Frank T. Rothaermel (2005) Incubator firm failure or graduation? The role of university linkages, *Research Policy*
- [9] Hackett and Dilts (2008) *Inside the Black Box of Business Incubation: Study B—Scale Assessment, Model Refinement, and Incubation Outcomes*.
- [10] Ge, Z.F. (2018) A Study on Improving of Incubating-Efficiency of Incubators in Zhejiang Province, China. *IBusiness*, 10, 144–176. <https://doi.org/10.4236/ib.2018.103009>
- [11] Haiyang Zhang and Tetsushi Sonobe (2011). Business Incubators in China: An Inquiry into the Variables Associated with Incubatee Success. *Economics: The Open-Access, Open-Assessment EJournal*, Vol. 5.
- [12] Hackett and Dilts (2008) *Inside the Black Box of Business Incubation: Study B—Scale Assessment, Model Refinement, and Incubation Outcomes*
- [13] Johanna Vanderstraeten (2011) Service-based differentiation strategies for business incubators: Exploring external and internal alignment, *Technovation* Vol 32, issue 12
- [14] Jong-Wen Wann, Ta-Jung Lu, Ina Lozada, Guillermo Cangahuala, (2017) —University-based incubators' performance evaluation: a benchmarking approach, *Benchmarking: An International Journal*, Vol. 24 Issue: 1, pp.34–49
- [15] Kris Aerts *et al.*(2019) Critical role and screening practices of European business incubators, *Technovation* (2007)
- [16] Mubarki *et.al* (2011), measuring the Effectiveness of Business Incubators: A four dimensions approach from a Gulf Cooperation Council perspective, *Journal of Enterprising Culture*.
- [17] Mubarki *et.al* (2015). Categories of incubator success: a case study of three New York incubator programmes, *World Journal of Science, Technology and Sustainable Development* Vol. 12 No. 1, pp. 2–12
- [18] Mubarki, A, (2015). Categories of incubator success: a case study of three New York incubator programmes' *World Journal of Science, Technology and Sustainable Development* Vol. 12
- [19] Nicholas Theodorakopou *et.al.*, (2014) —What matters in business incubation? A literature review and a suggestion for situated theorising, *Journal of Small Business and Enterprise Development*, Vol. 21 Issue: 4, pp.602–622
- [20] Nisakorn Somsuk (2012), Technology business incubators and industrial development: resource based view *Industrial Management & Data Systems* Vol. 112 No. 2, Organisation for Economic Co-Operation and Development Code/GD (97)202
- [21] Rhonda G. Phillips (2002), Technology business incubators: how effective as technology transfer mechanism, *Technology in Society*.

- [22] Rudy Aernoudt, (2004) Incubators: Tools for Entrepreneurship? *Small Business Economics*.
- [23] Rustam Lalkaka (2006) Technology Business Incubators: Critical Determinants of Success Rustam Lalkaka (2002) Technology business incubators to help build an innovation-based economy, *Journal of Change Management*, 3:2, 167–176, DOI: 10.1080/714042533
- [24] Sarfraz Mian *et al.*, (2016) Technology Business Incubation: An overview of the state of knowledge, *Technovation*,
- [25] Schwartz, M. (2011), —Incubating an illusion? Long-term incubator performance after graduation, *Growth and Change*, Vol. 42 No. 4, pp. 491–516
- [26] Sean M. Hackett; David M. Dilts (2004), A Real Options-Driven Theory of Business Incubation *Journal of Technology Transfer*, 29, 41–54, 2004
- [27] Selma R. *et al.* (2016) Empirical Evidence about the Characteristics and Business Incubators Performance: A Framework of Multiple Cases American International Journal of Contemporary Research Vol. 6.
- [28] Udell (1990) Are Business Incubators Really Creating New Businesses and New Products, *Journal of Production and Innovation Management*
- [29] Vernet Lasrado *et al.* (2015) Do graduated university incubator firms benefit from their relationship with university incubators? *Journal of Technology Transfer*, 2
- [30] Wadid Lamine *et al.* (2018) —Technology business incubation mechanisms and sustainable regional development *Journal of Technology Transfer* (2018) 43:1121–1141
- [31] Xiao, Li *et al.* (2016), The graduation performance of technology business incubators in China's three tier cities: the role of incubator funding, technical support, and entrepreneurial mentoring, *The Journal of Technology Transfer*.
- [32] Zouhaïer M'Chirgui (2012) Assessing the Performance of Business Incubators: Recent France Evidence, *Business and Management Research*

Systematic Literature Review of Employee Engagement: Thematic Analysis and Future Agenda of Research

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Abstract: This study aims to develop and contribute to conceptual clarity in the area of employee engagement. This article elucidates the following objectives:- Firstly, to define Employee Engagement. Subsequently, to conduct a Thematic Analysis and propose a conceptual model based on the same, and finally to find out the research gaps and give future direction of research. A systematic literature review, proposed by Tranfield (2003), has been adopted. Based on the findings of 90 studies, a thematic review has been established. The broad themes determined in the study comprises Psychological Contract, CSR, Generational Cohorts, Fun at workplace, and Workplace Spirituality.

Keywords: Employee Engagement, Work Engagement, Generational Cohorts, CSR, Psychological Contract, Fun at Work, Workplace Spirituality, Human Resource Development, Human Resource Management.

INTRODUCTION

Change and restructuring have become an unavoidable task for organizations these days due to dynamic market conditions, which has given birth to various challenges faced by organizations today. Some of the biggest challenges HR is currently facing are recruiting talented employees, ensuring that the existing staff is engaged, and retaining them (Hughes, 2008). Effectual organizations understand that an engaged workforce results in better performance, so many are placing greater emphasis on measuring employee engagement and implementing strategies to keep staff more engaged.

Employee engagement has received great attention since the last two decades and in recent years as well, also many researchers have declared that Employee Engagement anticipates the success of the organization, employee outcomes, and financial performance (e.g., total shareholder return) (Bates, 2004); (Baumruk, 2004) (Harter, 2002); (Richman, 2006) but at the same time, it has appeared that employee engagement withdrawal at workplace causes US companies a loss of \$300 billion per year (Bates, 2004); (Johnson, 2004) (Kowalski, 2003); (Ram, 2011). It has been stated that workers'

engagement has taken a downturn and shown an extended level of engagement among the employees nowadays Bates (2004), Richman (2006). As stated in 44, Harter (2002), organizations that have a high rate of engaged employees have 51 percent higher efficiency as compared to those with low engagement levels. According to the study conducted by Galt (2005), it was found that only 17 percent of Canadian employees were seriously engaged in their work Aslam (2018).

High levels of engagement at domestic and global level firms promote retention of talent, foster employee loyalty, and increases organizational performance and stakeholder value. The concept ‘engagement of employees’ is influenced by numerous factors—from workplace environment, culture, organizational communication, and leadership styles to trust and respect for supervisors. For today’s diverse generations, work/life balance and empowerment to make decisions and access to training and career opportunities are important. Thus, to adopt a culture of engagement, HR designs, measures, and evaluates proactive workplace practices and policies that help attract and retain talent with competencies and skills necessary for growth and sustainability. EE is considered an element that potentially influences sustainability in enterprises Saratun (2015).

It has been perceived that if a manager completely ignored employees, 40% of them will be actively disengaged in their jobs. If a manager focuses on employees’ weaknesses, 22% will be disengaged. Only 1% of workers will be disengaged if the manager focuses on employees’ strengths. In spite of the escalated attention of scholars and practitioners in this construct of employee engagement, there remains a scope of measurement of the effect of different variables on it. Gallup, (2009).

Unfortunately, much of what has been written about employee engagement comes from the practitioner literature. There is a surprising scarcity of research on employee engagement in the academic literature (Robinson, 2004). Employee engagement has been criticized as being nothing more than consultant speak, or a poorly defined construct Little, (2006). Saks, (2006) argue that Employee Engagement (EE) studies in the academic literature are not sufficient.

This paper addresses the various definitions given by the researchers in this field to establish a conceptual clarity of the construct. It also undertakes a thematic analysis of employee engagement, analyzes the research gaps, and thus putting forward a future agenda for research.

LITERATURE REVIEW PROCESS

A systematic literature review, as proposed by Tranfield (2003), has been adopted. It is a comprehensive review based on all the research regarding the focused research area. In the course of the database search, search criteria include the period of publication; these papers were reviewed under three months’ time. In the area of management and social sciences, the following databases were identified for the study viz. Sage Journals,

Emerald, Taylor & Francis Online, Elsevier's Science Direct, Wiley Online Library, Springer Journals, American Psychological Association, Shri Ram Centre for IR and HR. These were identified, keeping in mind the objectives of the research.

Keywords used were "Employee Engagement" and "Work Engagement." Total of 90 papers were reviewed.

Table 1: Systematic Literature Review Process

1.	Need for study	a. To develop a conceptual clarity in the area of employee engagement. b. To identify the research gaps in the area of employee engagement
	Area of study	Thematic development of employee engagement.
	Conducting the Review	
	Study selected and quality assessment	Total of 90 Research Papers SSCI , Scopus Indexed and peer reviewed Journals were taken
2.	Categorization & theme recognition from the literature	1. Summarization of selected studies. 2. Definition by selected authors 3. Themes Recognized : i. CSR ii. Psychological Contract iii. Generational Cohorts iv. Fun at work v. Workplace spirituality

Source: Author's Compilation.

Table 2: Summary of Selected Studies on Employee Engagement

Author & Year	Description
Bakker (2008)	Employee Engagement can be referred to as the state of mind, including vigor, dedication, and absorption. Engaged employees are creative, innovative, and productive and voluntarily want to put effort into achieving the organizational goals.
Saks (2006)	Differentiates between job and organization engagement. Reported that perceived organizational support predicts engagement, job characteristics predict job engagement, and procedural justice predicts organization engagement. Additionally, job and organization engagement mediated the relationships between antecedents and job satisfaction, intentions to quit, organizational commitment, and organizational citizenship behavior.
Maslach C. &. (2008)	Employee engagement is the opposite of burnout.
Plester (2016)	Used three different forms of workplace fun to examine the relationship between engagement and workplace fun activities.
Moore (2014)	The relationship, generational cohorts has with the psychological contracts and employee engagement.
Ahmed (2016)	The study throws light on supervisor support and coworker support and their relationship with engagement.

Table 2 (Contd.)...

Ali (2014)	The study discloses the relationship of work overload on job satisfaction and the relationship of job satisfaction on employee performance, employee engagement.
Budhwar (2007)	Explores relationship between talent management and levels of employee engagement.
Garg K.D. (2018)	Studied the levels of job satisfaction and the relationship between job satisfaction and work engagement among managers working at various hierarchical levels.
Datche (2015)	Tested the effect of transformational leadership on employee engagement. Transformational leadership was found to be positively related to employee engagement

Source: Author's compilation.

The subject of employee engagement has presently become an emerging trend in the field of Human Resource Development Research. The development and rapidity at which the Employee Engagement is rising is a demonstration of both genuine pieces of research undertaken by researchers and the prominence of the construct practically throughout organizations.

Employee Engagement has been defined by many researchers in different ways over the years. The general view of employee engagement is that it is positive in nature, concerned with self- motivation, high involvement of employees both physically and mentally. Since there is a fundamental relationship between the antecedents (e.g., job duties, training) and consequences (e.g., commitment, retention) of employee engagement, it has been receiving substantial attention by scholars and practitioners in the field of psychology, human resource development (HRD) and organizational behavior (OB), Hoon Song J. K., (2012). Employee engagement has secured appreciable popularity in the past two decades, yet this term is not defined consistently throughout these years. Though there is adequate matter available on this subject, there remains a dearth for meticulous research on the same. Performance enhancement and employee retention being the focus of the organization and the fact that there is a relationship between employee engagement and job performance, the study on this construct deserves to receive more attention Hoon Song J.K., (2012).

However, in line with the increase in the term's popularity, a challenge is elevated. What is the meaning of employee engagement, and how should it be defined? Macey (2008).

Table 3: Definitions of Employee Engagement

S. No	Definitions	Keywords	Reference
1	Harnessing of organization members' selves to their work roles. People employ and express themselves psychically, cognitively and emotionally during role performances.	Physically, Cognitively, Emotionally, Work Roles	Kahn (1990)
2	The extent to which employees commit to something or someone in their organization, how hard they work and how long they stay as a result of that commitment	Commitment	Macey (2008)

Table 3 (Contd.)...

....Table 3 (Contd.)

3	A continual, positive affective-motivational state of fulfillment in employees that is characterized by high levels of activation and pleasure.	Positive, Continual, Motivational State	Maslach C.S. (2001)
4	Engagement is a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication, and absorption. Rather than a momentary and specific state, engagement refers to more continuous and pervasive affective - cognitive state that is not focused on any particular object, event, individual, or behavior	Positive, Workrelated, Vigour, Dedication, Absorption, Cognitive	Schaufeli W.B. (2002)
5	Work engagement is defined as “the Psychological state that accompanies the behavioral investment of personal energy”.	Psychological State, Behavioral Investment, Personal Energy.	Schaufeli W.B. (2010)
6	The ability to detain the heads, hearts, and souls of employees to instill an intrinsic desire and passion for excellence.	Intrinsic Desire, Passion, Excellence	Fleming (2007)
7	The right people in the right roles by means of the right managers drive employee engagement.	Right People, Role, Manager.	Buckingham (1999)
8	A positive attitude held by the employee towards the organisation and its values.	Positive Attitude, Values, Aware	Robinson (2004)
9	Engagement refers to high internal motivational state	Internal Motivational State	Colbert (2004)
10	Employee engagement refers to the amount of discretionary effort exhibited by the employees in their jobs	Discretionary Effort	Frank (2004)

Source: Author's compilation

Though there is no single, agreed-upon definition of employee engagement, there is an agreement that engagement entails more than just motivation or performance. Common subjects found in most definitions include a commitment to and confidence in the organization and its values and the ability and willingness to contribute ‘discretionary effort’ to lead a successful organization. Many definitions also underline an emotional connection towards the organization, a passion for work, and feelings of hope about the future with the organization. Engaged employees also derive satisfaction from organization success.

By analyzing the literature review undertaken, our understanding of Employee Engagement refers to the curbing of individual aspects (e.g., cognitive, emotion, energy, absorption, dedication) with work aspects (e.g., performance, organization goals, retention). An engaged employee shows a positive attitude towards the organization, is capable and actively involved in his job, takes the initiative and puts voluntary efforts towards his work.

THEMATIC ANALYSIS

After reviewing the literature in a systematic manner, certain patterns or themes were developed concerned with addressing certain research questions. In the theme

development process, the influence, role, and relationship of a particular theme with employee engagement are discussed. This review identifies six essential themes: Corporate Social responsibility, Generational cohorts, HR practices, Psychological Contract.

CORPORATE SOCIAL RESPONSIBILITY

Corporate social responsibility has been in the limelight in the last decades. The challenges resulting from technological change and fast-paced market changes put to organizations, and a new, more informed consumer, raised the standard regarding how companies should behave towards consumers and stakeholders, including social, economic, and environmental matters Garavan (2010). On the other contrary, employees are progressively questioning the significance of their work, and companies that fail to realize this will encounter problems in attracting, engaging, and retaining the best employees Bhattacharya (2008). Organizations are more and more adopting socially responsible organizational practices in response to increasing competition and rising commercial pressure from multiple stakeholder classes.

Kotler (2005) defined CSR as “*The commitment to improve communal well-being through voluntary organizational practices and contributions of a corporate resource.*” Carroll (1979) defined CSR as “the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time” In other words, we can assert that CSR can be defined as practices that organization engage in and policies regarding creating positive social and environmental changes intended to bring a change and attracting shareholders and consumers. CSR has internal and external facets. Internal CSR practices refer to practices that are directly related to the psychological and physical work environment of employees Turker (2009). On the other hand, external CSR practices refer to corporate socially responsible practices focused on customers, business partners and suppliers, local communities, NGOs, and public authorities Al-bdour (2010). While there is a wide range of literature addressing CSR and its relationship with the role of HR, few empirical studies have focused on the relationship between CSR and Employee Engagement. This is certainly due to the recentness of the concept of employee engagement.

Saks (2006), Blau (1964) has stated that individuals will contribute and exchange their attitude and behaviour with others, with expectations to benefit from what is received in return. Therefore, when the organization supports its employees in various forms, for example, economic and socio-emotional, the employees will tend to react in the form of gratitude Cropanzano (2005). While several studies Brown (1996); Hakanen (2006); Saks (2006); Richardsen (2006) indicate positive relationships between EE and work outcomes; few of these studies investigated the role of volunteerism and high levels of corporate social irresponsibility on engagement. At the same time, scholars have not examined the relationship between internal CSR practices and EE in emerging economies, while studies have yet to be conducted in the Indian Context.

The research question here arises, does high levels of corporate social irresponsibility creates several negative outcomes? Smith (1982/1759).

GENERATIONAL COHORTS

Globalization has led to changes in the corporate world, and these organizations are witnessing generational differences in their workplace (Bano, 2015). A generation is a group of people born in the same time period, share similar experiences, values, and attitudes. Howe and Strauss (2000) study describe four types of generations, namely silents (born in mid-1920 to 1940), baby boomers (1941 to 1960), and generation X (1961-1980), Millenials (1981-2000).

Those born 1920-1940 fall in the oldest generation group in the workplace. They are also likely to be stable, detail oriented, loyal, and hardworking, although they may be incompetent with ambiguity and change, uncomfortable with conflict, and reticent when they disagree Zemke (2000).

Baby Boomers (years of birth: 1941-1960) .They live to work and respect authority and hierarchy in the workplace. They expect that their loyalty towards the company should be rewarded through promotions based on seniority. Mostly, they are very loyal to the company, and they expect the company to be loyal to them Gursoy (2008) Generation X (years of birth: 1961-1980). They work to live. They are not likely to sacrifice their life for the company. Seniority is not important for them. They are not willing to wait for their turn for promotion and raises. They expect immediate recognition through the title, praise, promotions and pay Gursoy (2008). They tend to distrust big institutions and assume that every job is a stepping stone. They are not very loyal to any particular company. They are very skeptical, self-focused, and self-protective at work Adams (2000) Generation Y/Millennials (years of birth: 1982-2000). They believe in collective action, are optimistic about the future, and trust centralized authority. They are great collaborators and favor teamwork. They are also very independent, self-confident, and self-expressive. They like to be recognized and respected. They are likely to challenge workplace norms such as dress codes, the inflexibility of the standard workday, and employee-supervisor relations Gursoy (2008). However, these labels are based on the generally accepted generational categories in the western world, might not be entirely applicable to all other parts of the world.

In the current scenario, the organizations have to deal with these generational differences in the workplace. Companies invest so much of time, money, and energy to hire young employees without experience and give a chance to work. These fresh employees switch the job for their benefit and leave the company, which is a major concern for the service industry Bano (2015), Pitt-Catsouphe (2008) found in his empirical study that, when provided flexibility at work, the older generation was more engaged. Perrin (2005) found positive relationships between the adoption of flexible work policies and engagement and components of engagement such as loyalty or commitment Rochling (2010). Some research, specifically on the relationship between

age and engagement, however, contradicts finding that age has no relationship to engagement Tritch (2001) or that engagement, in fact, decreases with age Reeve (2011). Organizations and their leaders will face many challenges in the coming years. One of the most important challenges will be hiring, training, managing, and retaining Millennial employees. Based on insights generated from Moore (2014) it can be concluded that over reliance on generational stereotypes could lead to faulty decision making by employers. While there are certain meaningful differences between generations, a study by Moore (2014) supports that there may be core ways that all generations are alike. Leaders would be well served to remember that human resources are people and not just employees of their generation. This contradiction in the findings of the relationship between generational cohorts and engagement makes further research of these constructs evident.

PSYCHOLOGICAL CONTRACT

The term psychological contract first coined by Menninger (1958), he describes it as the reciprocal relationship between treating therapists and their patients. Levinson (1962) further expanded the idea of the psychological contract to comprise the unwritten contracts and/or unwritten expectations between the employer and the employee (p. 22). Argyris (1960) regarded it as employee expectations at the workplace. Schalk (2007), noted that psychological contracts are, mainly, unspoken and unstated. These assertions set the groundwork for Rousseau and her research on psychological contracts. Rousseau (1989) seminal work defined psychological contracts as the beliefs that are held by an individual regarding employee and employer reciprocity. The author renewed interest in the study of psychological contracts by slightly adjusting the definition from expectation to owe. This definition implies that each party understands and accepts that the relationship is based on contributions to the other. Rousseau highlights the construct as individually subjective. This means that there may be differences between what the employee expects and what the company or manager believes has been promised. The difference in understanding kindled research regarding employee reactions based on fulfillment and breach of the psychological contract.

Kahn (1990) Empirically connects role performance to the employees' emotional and psychological state. He described his study as having the premise that "people can use varying degrees of their selves, physically, cognitively, and emotionally, in work role performances..." (p. 692). Kahn's statement foretells a later connection between psychological contracts and the not yet created employee engagement construct. From Rousseau's work, we understand that psychological contracts speak to the informal expectations held by both the employee and the employer – terming them fulfilled when kept and violated or breached when broken. The indication that psychological contracts have a cognitive and/or emotional aspect that can then

be globally measured is noteworthy. This is important to the present study since employee engagement has also been defined as having emotional/cognitive reveals a common theme among employee engagement; that there is an emotional, cognitive, and behavioral component to the construct. Of particular interest are the emotional and cognitive components. Words like affect, feel, cognitive, and emotional have been used to describe psychological contracts and employee engagement. It is the emotional, cognitive aspect that connects employee engagement and psychological contracts. This study posits that employee engagement and psychological contracts, being impacted by aspects of the same core components (emotion and cognition), may thereby have an impact on each other. A study by Moore (2014) states the empirical evidence does support the idea that psychological contract fulfillment is related to employee engagement. Considering the limited literature review undertaken regarding these two constructs, the need for empirical research to further explore the relation of psychological contract and engagement in the different sectors is evident.

FUN AT WORKPLACE

Engagement is defined in terms of high energy and a positive psychological state and emotions such as happiness, joy, and enthusiasm. Fun also includes such enjoyment, pleasure, frivolity, play, and laughter, which suggests significant conceptual overlap. There is, however, to our knowledge, only a handful of research that specifically investigates the connection between these concepts. While Fluegge (2008) emphasized fun activities are included in task activities, McDowell (2004) highlighted that fun activities are excluded from task activities Albrecht (1992) calls for research that focuses on “understanding the psychology or felt experience of engagement” (p.17). Quoting Bindl (2010), he claims that the more the employees internalize workplace values, the greater their levels of engagement. Fun is a concept that has been often cited and promoted as a specific workplace value Bolton (2009)

What we do know is that for engaged employees, actual work is fun Schaufeli W.B. (2010), and Gorgievski (2010) suggest that workaholism and work engagement are differentiated primarily by the positive affect or “fun” associated with engagement. Therefore in the extant literature, there are already some passing linkages to the notion of fun in engagement and calls for greater culture, climate, and values studies of which fun is an important component. Fun allows people to take a break from work tasks and created a positive effect upon their mood, which they then applied to their work tasks. This break or ‘relief’ function of fun promoted a refreshed reengagement with their work tasks. Therefore, fun experienced within work tasks or fun experienced as a short diversion from work tasks promotes greater engagement.

Prior literature does suggest that workplace fun can create cynicism and disharmony. Spontaneous fun among colleagues can be noisy and distracting for some employees,

and these elements of fun can therefore cause distraction from work tasks and causes employees to disengage from their tasks, their organization, or both. For managers and HRM practitioners, the key message is that fun is a tricky area to get right, but is worth endorsing as long as it is done carefully. In conclusion, we have presented a qualitative study that has shown preliminary links between fun and engagement. Specifically, fun helps employees refresh themselves, enjoy their tasks, and feel positively towards their organization. However, if not treated cautiously, the fun can also serve as a distraction, which in turn can lead to disengagement.

WORKPLACE SPIRITUALITY

There is little consensus among research scholars for an acceptable definition of workplace spirituality Kinjerski (2004). Workplace spirituality has been approached through diverse conceptions such as value and belief system as a way to get in touch with the inner self, as a means of self-realization, and as inner experience Garg N. (2017). Workplace spirituality helps to establish a connection with the true self Dehler, G.E. and M.A. Welsh (2003). Spirituality is a special capability that connects one with its complete self, with others, and with the complete universe Mitroff, I.I. & Denton, E.A.(1999). Although there is little harmony over the meaning of workplace spirituality McKee, M.C., Mills, J.H., & Driscoll C. (2008), it has been associated with a number of key dimensions such as meaning, purpose, and a sense of community and connection to others Ashmos, D.P. & Duchon, D. (2000)

Employee engagement level is decreasing Bates (2004), Richman (2006), and such a situation is referred to as the “engagement gap” Johnson (2004), Kowalski (2003). HR professional relies on workplace spirituality for solving the serious problem of engagement gap Pfeffer (2010). Employee engagement is associated with the human spirit at work May D.R., Gilson R.L., & Harter L.M. (2004), and workplace spirituality helps in experiencing complete self at work Krishnakumar S. & Neck C.P., (2002). Highly engaged employees require a work profile that utilizes all aspects (cognitive, physical, emotional, social, and psychological) of an individual personality Garg N. (2017). And spiritual workplace induces the complete involvement of the employees at the workplace Milliman J., Czaplewski A.J., & Ferguson J. (2003).

Spirituality develops mutual faith and trust among employees and employers, and it produces an appropriate environment wherein an employee’s readiness to take higher responsibility increases. These theoretical inferences establish a linkage between spiritual workplace and employee engagement. Other scholars Albrecht (1992); Markos S. & Sridevi M.S. (2010); Mehta (2013) observe a positive relationship between employee engagement and various performance parameters.

Therefore, we can come to an understanding that spirituality at workplace and engagement denotes a sense of completeness or wholeness in a work set-up.

Krishnakumar S. & Neck C.P. (2002) have opined in their findings that ‘Spirituality is recognized as one of the crucial dimensions of the human personality. If an organization is encouraging spirituality, then it is actually boosting its employees to bring their complete self to work.’ The coexistence of both the term predicts that organizations embracing spirituality in the workplace might facilitate employees to fully engage themselves in their respective work roles. Therefore, there is a call for an empirical introspection between the dimensions of workplace spirituality and employee engagement.

Although there has not been an explicit recognition in the workplace spirituality or employee engagement literature that the two are connected, the importance of spirituality at work for employee engagement has been recognized by several authors. Mirvis (1997), Kolodinsky R.W., Giacalone R.A. & Jurkiewicz C.L. (2008)

CONCEPTUAL MODEL

A conceptual model has been proposed on the basis of thematic analysis with four independent variable, a moderator and one dependent variable. The four independent variable are CSR activities, Psychological contract, fun at workplace and workplace spirituality. Generational cohorts being the moderator and employee engagement being the dependent variable. Figure 1. Depicts the relationship between these independent, dependent and moderating variables.

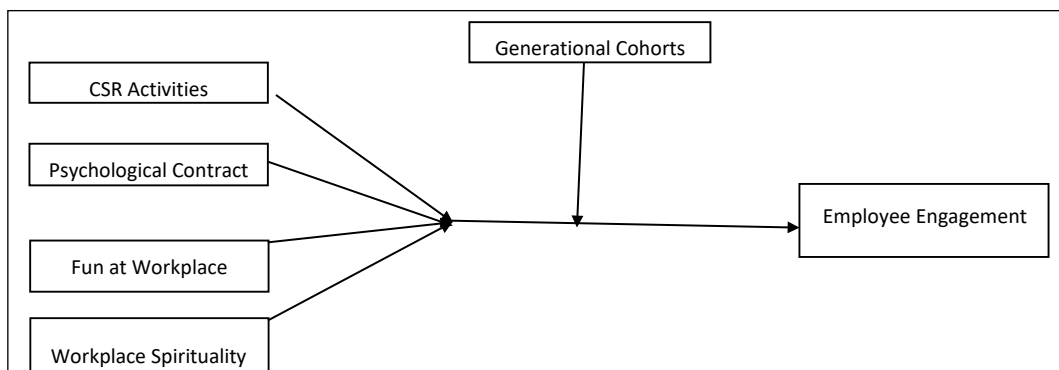


Fig. 1: Factors Leading to Employee Engagement.

RESEARCH GAPS

1. Although there is a large and growing body of knowledge concerning engagement and its' antecedents, disengagement is not often discussed or considered. Disengagement is an important concept as low-quality work is harmful to people, and therefore the ability to disconnect from work mentally, physically, and/or emotionally is a crucial form of protection for some workers. It is postulated that 50-70 percent of workers are not engaged, and there is very little research on disengagement (Wollard K.K. & Shuck B. 2011)

2. This study opens new opportunities for research in the relation between CSR and HR, mainly because the concept of engagement is still recent and, as such, there is a lack of understanding of what promotes employee engagement. Moreover, the use of different approaches by, for example, measure employees' perception of their company's CSR and the impact it has on their engagement.
3. Although workplace spirituality and employee engagement have developed autonomously, however, they clearly share many commonalities in their expositions. Basically, the interconnection between them recommends HR functionary to make it exist concurrently in their organizations as spirituality in the workplace may enable employees to fully engage themselves with their work assignments/roles. The need for spirituality is a recurrent theme in corporations and businesses Karakas (2010) and it is expected that they need to embrace a set of humanistic and spiritual values in their engagement process. There is a dearth of empirical studies on the relationship between workplace spirituality and employee engagement.
4. Workplace fun can be investigated in the positive organizational scholarship umbrella. Because it is an inherently positive concept, and however, there are studies about workplace fun are missing, It is important to investigate workplace fun on a collective level (i.e., team).
5. Several research has been done to find the relationship between generational affiliation and employee engagement. However, a study on the engagement of millennials and their impact on outcomes like job satisfaction, loyalty, and retention needs to be explored.
6. As suggested by Meyer (2008), future research direction involves investigating how other intrinsic motivational theories, such as self-determination theory (SDT), can influence an individual's level of engagement.

CONCLUSION

In Human Resource Management and Organizational Behavior literature, employee engagement is, without a doubt, an interesting and critical construct. The main attempt was to develop a conceptual clarity, pinout the challenges of employee engagement, which has been hardly addressed by other authors, and explore important gaps in the literature of the construct of employee engagement, which, in terms of desk research, reveals seven gaps as specified above. Concerning the gaps identified above they can be classified as theoretical gaps and empirical gaps. Gaps numbered 1, and 6 are mainly theoretical gaps, whereas gaps numbered 2,3,4 and 5 are empirical gaps. Based on the identified gaps and thematic development with five variables, namely corporate social responsibility, fun activities at work, psychological contract, generational cohorts, and workplace spirituality was developed which leads/affects employee engagement. An empirical study can be conducted to further explore the influence of the variables,

hence, this research work contains valuable implications and potential for future research.

There are some limitations to the present study that needs to be acknowledged. First, the analysis is limited to publications in the English language only, and therefore it may exclude important contributions in other languages. Second, despite the best efforts, the search for articles may not have been exhaustive, which may have subsequently excluded other articles from the analysis. Thus, the limitation of the present study lies not only in the limited number of papers identified but also in terms of the level of other qualitative methods that can be further analyzed.

FUTURE SCOPE OF RESEARCH

- Future studies should explore the factors that cause disengagement in employees of different industries.
- Future studies should undertake empirical research on internal CSR practices and their impact on worker's engagement.
- Further studies should explore the relationship between workplace spirituality, and its influence on employee engagement.
- Future studies should investigate the effect on workplace fun on team-engagement.
- Role of engagement in retaining the millennial generation employees.
- Further examination of how other organizational variables may mediate/moderate the relationship between workplace spirituality to engagement, e.g, organizational climate and ethics.
- Further exploration of how public and private organizations differ in terms of CSR–employee engagement relationship. (Chaudhary, 2019)

REFERENCES

- [1] Adams, S.J. (2000). Generation X: How understanding this population leads to better safety programs.. *Professional Safety*, 45(1), 26.
- [2] Ahmed, U.M. (2016). Moderation of meaningful work on the relationship of supervisor support and coworker support with work engagement. . *The Journal of Business,Economics, and Environmental Studies (JBEEES)*, , 6(3), 15–20.
- [3] Al-bdour, A.A. (2010). The Relationship between Internal Corporate Social Responsibility and Organizational Commitment within the Banking Sector in Jordan. *International Journal of Social, Behavioral, Educational, Economic*,.
- [4] Albrecht, D.E. (1992). Pentecostal Spirituality: Looking through the Lens of Ritual.” *Pneuma: . The Journal of the Society for Pentecostal Studies* 14, No. 2: 107–25.
- [5] Ali, S. &. (2014). Effect of work overload on job satisfaction, effect of job satisfaction on employee performance and employee engagement (a case of public sector University of Gujranwala Division). *International Journal of Multidisciplina*.

- [6] Argyris, C. (1960). *Understanding Organizational Behavior*.
- [7] Ashmos, D.P., & Duchon, D. (2000). Spirituality at work: A conceptualization and measure. *Journal of Management Inquiry*, 9(2), 134–145.
- [8] Aslam, U.M. (2018). Investigating the antecedents of work disengagement in the workplace. . *Journal of Management Development*.
- [9] Bakker, A.B. (2008). *Towards a Model of Work Engagement*. Career Development International.
- [10] Bano, S.V. (2015). Perceived organisational support and work engagement: A cross generational study. *Journal of Psychosocial Research*, , 10(2), 357–364.
- [11] Bates, S. (2004). Getting engaged. *HR Magazine*, 49(2), 44–51.
- [12] Baumruk, R. (2004). *The Missing Link: The Role of Employee Engagement in Business Success*. 48–52.
- [13] Bhattacharya, C.B. (2008). Using corporate social responsibility to win the war for talent. *MIT Sloan Management Review*, 49(2).
- [14] Bindl, U.K. (2010). 32 Feeling good and performing well? Psychological engagement and positive behaviors at work. *Handbook of Employee Engagement: Perspectives, Issues, Research and Practice*, 385.
- [15] Blau, P. (1964). *Exchange and Power in Social Life*. New York: Wiley.
- [16] Bolton, S.H. (2009). Crossing the line: Boundaries of workplace humour and fun. *Employee Relations*.
- [17] Brown, S.P. (1996). A new look at psychological climate and its relationship to job involvement, effort, and performance. . *Journal of Applied Psychology*, 81(4), 358.
- [18] Buckingham, M.C. (1999). *First Break all the Rules: What the Worlds Greatest Managers do Differently*. Simon and Schuster: New York.
- [19] Budhwar, P.S. (2007). Talent management strategy of employee engagement in Indian ITES employees: key to retention. *Employee Relations*.
- [20] Carroll, A.B. (1979). A three-dimensional conceptual model of corporate performance. *Academy of Management Review*, 4(4), 497–505.
- [21] Chaudhary, R. (2019). Corporate social responsibility perceptions and employee engagement: role of psychological meaningfulness, safety and availability. *Corporate Governance: The International Journal of Business in Society*.
- [22] Colbert, A.E. (2004). Interactive effects of personality and perceptions of the work situation on workplace deviance. *Journal of Applied Psychology*, , 89(4), 599.
- [23] Cropanzano, R. &. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, 31(6), 874–900.
- [24] Datche, A.E. (2015). The effects of transformational leadership on employee engagement: A survey of civil service in Kenya. *Journal Issues ISSN*, 2350, 157X.
- [25] Dehler, G.E., and M.A. Welsh. (2003). The experience of work: Spirituality and the new workplace. *In Handbook of Workplace Spirituality and Organizational Performance*, ed. R. A. Giacalone and C. L. Jurkiewicz, 108–22. Armonk, NY: M. E. Sharpe.
- [26] Fleming, J.H. (2007). *Human Sigma*. New York: Gallup Press.
- [27] Fluegge, E. R. (2008). Who put the fun in functional? Fun at work and its effects on job performance. University of Florida.
- [28] Frank, F. D. (2004). The race for talent: Retaining and engaging workers in the 21st century. *Human Resource Planning*, 27(3).

- [29] Gallup. (2009). *Driving Engagement by Focusing on Strengths*. <https://news.gallup.com/businessjournal/124214/driving-engagement-focusingstrengths.aspx>.
- [30] Galt, T. (2005). Falling in love (with work) all over again. *Globe and Mail*, pp. C1.8.
- [31] Garavan, T.N. (2010). Human resource development and society: Human resource development's role in embedding corporate social responsibility, sustainability, and ethics in organizations. . *Advances in Developing Human Resources*, , 12(5), 4.
- [32] Garg, K.D. (2018). Job satisfaction and work engagement: A study using private sector bank managers. *Advances in Developing Human Resources*, 20(1), 58–71.
- [33] Garg, N. (2017). Workplace spirituality and employee well-being: An empirical exploration. . *Journal of Human Values*, 23(2), 129–147.
- [34] Garg, N. (2017). Workplace spirituality and organizational performance in Indian context: Mediating effect of organizational commitment, work motivation and employee engagement. . *South Asian Journal of Human Resources Management*, 4(2), 191–211.
- [35] Gorgievski, M.J. (2010). Work engagement and workaholism: Comparing the self-employed and salaried employees. *The Journal of Positive Psychology*, 5(1), 83–96., 265.
- [36] Gursoy, D.M. (2008). Generational differences: An examination of work values and generational gaps in the hospitality workforce. . *International Journal of Hospitality Management*, , 27(3), 448–458.
- [37] Hakanen, J.J. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, 43(6), 495–513.
- [38] Harter, J.K. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A metaanalysis. *Journal of Applied Psychology*, 87, 268–279.
- [39] Hoon Song, J.K. (2012). Role of transformational leadership in effective organizational knowledge creation practices: Mediating effects of employees' work engagement. *Human Resource Development Quarterly*, 23(1), 6.
- [40] Hughes, J.C. (2008). Talent management: A strategy for improving employee recruitment, retention and engagement within hospitality organizations. *International Journal of Contemporary Hospitality Management*, 20(7), 743–757.
- [41] Johnson, M. (2004). The new rules of engagement: Life-work balance and employee commitment. . *CIPD Publishing*.
- [42] Kahn, W. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, Vol. 33, pp. 692–724.
- [43] Karakas, F. (2010). Spirituality and performance in organizations: A literature review. *Journal of Business Ethics*, 94(1), 89–106.
- [44] Kinjerski, V.M. (2004). Defining spirit at work: Finding common ground. *Journal of Organizational Change Management*.
- [45] Kolodinsky, R.W., Giacalone, R.A., & Jurkiewicz, C.L. (2008). Workplace values and outcomes: Exploring personal, organizational, and interactive workplace spirituality. *Journal of Business Ethics*, 81(2), 465–480.
- [46] Kotler, P. &. (2005). Best of breed: When it comes to gaining a market edge while supporting a social cause, “corporate social marketing” leads the pack. *Social Marketing Quarterly*, 11(3–4), 91–103.
- [47] Kowalski, B. ”. (2003). “The engagement gap. *Training*, Vol. 40 No. 4, p. 62.
- [48] Krishnakumar, S., & Neck, C.P. (2002). The “what”, “why” and “how” of spirituality in the workplace. *Journal of Managerial Psychology*.

- [49] Levinson, H.P. (1962). *Men, Management, and Mental Health*.
- [50] Little, B. &. (2006). Employee engagement: Conceptual issues. *Journal of Organizational Culture Communications and Conflict*, 10(1), 111–120.
- [51] Macey, W.H. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology*, 1(1), 3–30.
- [52] Markos, S., & Sridevi, M. S. (2010). Employee engagement: The key to improving performance. . *International Journal of Business and Management*, 5(12), 89.
- [53] Maslach, C. &. (2008). Early predictors of job burnout and engagement. *Journal of Applied Psychology*, 93(3), 498.
- [54] Maslach, C.S. (2001). Job burnout. *Annual Review of Psychology*, Vol. 52, pp. 397–422.
- [55] May, D.R., Gilson, R.L., & Harter, L.M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational and Organizational Psychology*, 77(1), 11–37.
- [56] McDowell, T. (2004). Fun at work: Scale development, confirmatory factor analysis, and links to organizational outcomes. (Unpublished doctoral dissertation). Alliant International University, San Diego, CA.
- [57] McKee, M.C., Mills, J H., & Driscoll, C. (2008). Making sense of workplace spirituality: Towards a new methodology. *Journal of Management, Spirituality & Religion*, 5(2), 190–210.
- [58] Mehta, D. &. (2013). Employee engagement: A literature review. *Economia. Seria Management*, 16(2), 208–215.
- [59] Menninger, K. (1958). *Theory of Psychoanalytic Technique*.
- [60] Meyer, J.P. (2008). Employee engagement from a self-determination theory perspective. *Industrial and Organizational Psychology*, 1(1), 60–62.
- [61] Milliman, J., Czaplewski, A.J., & Ferguson, J. (2003). Workplace spirituality and employee work attitudes: An exploratory empirical assessment. *Journal of Organizational Change Management*, 16(4), 426–447.
- [62] Mirvis, P.H. (1997). Crossroads—“soul work” in organizations. *Organization Science*, 8(2), 192–206.
- [63] Mitroff, I. I., & Denton, E.A. (1999). A study of spirituality in the workplace. *MIT Sloan Management Review*, 40(4), 83.
- [64] Moore, T. (2014). The Impact of Psychological Contract Fulfillment on Employee Engagement in The Millennial Generation: *The Moderating Effects of Generational Affiliation*. scholarworks.gsu.edu.
- [65] Perrin, T. (2005). Towers Perrin, *2005 Workforce Study*. global workforce.
- [66] Pfeffer, J. (2010). Business and the spirit: Management practices that sustain values. In *Handbook of Workplace Spirituality and Organizational Performance* pp. 43–59). Routledge.
- [67] Pitt-Catsoupes, M. &. C. (2008). The multi-generational workforce: Workplace flexibility and engagement. *Community, Work and Family*, , 11(2), 215–229.
- [68] Plester, B. &. (2016). Fun times: The relationship between fun and workplace engagement. *Employee Relations*.
- [69] Ram, P. &. (2011). An enquiry into the mediatory role of employee engagement: Evidence from the hotel industry in Jordan. . *Far East Journal of Psychology and Business*, 5(2), 41–59.
- [70] Reeve, J. &. (2011). Agency as a fourth aspect of students’ engagement during learning activities. . *Contemporary Educational Psychology*, 36(4), 257–267.

- [71] Richardsen, A.M. (2006). Work and health outcomes among police officers: The mediating role of police cynicism and engagement. *International Journal of Stress Management*, 13(4), 555.
- [72] Richman, A. (2006). "Everyone wants an engaged workforce how can you create it? *Workspan*, Vol. 49, pp. 36–9.
- [73] Robinson, D.P. (2004). *The Drivers of Employee Engagement Report*. Institute for Employment Studies, 72.
- [74] Roehling, P.V. (2010). Engaging the millennial generation in class discussions. *College Teaching*, 59(1), 1–6.
- [75] Rousseau, D.M. (1989). Psychological and implied contracts in organizations. *Employee Responsibilities and Rights Journal*, 2: 121–139.
- [76] Saks, A.M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*.
- [77] Saratun, M. (2015). *Performance Management to Enhance Employee Engagement*. cm.mahidol.ac.th.
- [78] Schalk, R. &. (2007). Towards a dynamic model of the psychological contract. *Journal for the theory of Social Behaviour*, 37(2), 167–182.
- [79] Schaufeli, W.B. (2010). Defining and measuring work engagement: Bringing clarity to the concept. *Work Engagement: A handbook of Essential Theory and Research*, 12, 10–24.
- [80] Schaufeli, W.B. (2010). Defining and measuring work engagement: Bringing clarity to the concept. *Work Engagement: A Handbook of Essential Theory and Research*, 12, 10–24.
- [81] Schaufeli, W.B.-R. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71–92.
- [82] Smith, A. (1982/1759). *The Theory of Moral Sentiments* (Glasgow edition). Indianapolis, IN: Liberty Classics.
- [83] Tranfield, D.D. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14 (3): 207–22.
- [84] Tritch, T. (2001). Talk of ages: younger or older, workers are about equally dedicated to their jobs. *Gallup Management Journal*, 1(4): 1.
- [85] Turker, D. (2009). How corporate social responsibility influences organizational commitment. *Journal of Business Ethics*, 89(2), 189.
- [86] Wollard, K.K., & Shuck, B. (2011). Antecedents to employee engagement: A structured review of the literature. *Advances in Developing Human Resources*, 13(4), 429–446.
- [87] Zemke, R.R. (2000). *Generations at Work: Managing the Clash of Veterans, Boomers, Xers, and Nexters in Your Workplace*.

The Impact of Green Marketing on Electric Vehicle Adoption: A Critical Sustainability Study in Auto Industry & Model Development

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Abstract: Today, the increasing fuel price and climate change are of great concern to all of us. The greenhouse gas emissions, increasing every day, places India in the top few contributors to greenhouse pollution to the world. Air pollution, the leading cause of the greenhouse effect, is fuelled by the ground transportation of people and goods by the internal combustion (IC) engine-driven vehicles.

Although a one-stop sustainability solution to this problem may be a shift to electric transportation, in reality, the electric shift has been prolonged. Electric vehicles share has not grown across the world as much we had anticipated. The main reason for this slow growth of electric vehicle share is the initial cost of such vehicles. However, the running cost of electric vehicles is significantly lower than the combustion ignition engine vehicles. We need to reduce the initial cost of electric vehicles and need to educate the world that electric vehicles are not as costly to maintain as we think. The range anxiety or the fear of battery drain out makes people think twice before adopting the new change. The lack of charging infrastructure creates fear in the mind of potential adopters too.

The present study attempts to develop a conceptual foundation for investigating the overall impact of green marketing on the adoption of electric vehicles. Several dimensions of Green Marketing's ontological assumptions are examined and proposed for acceleration of electric vehicle adoption. Furthermore, the study involves a critical examination of the different green marketing strategies. Subsequently, a conceptual model has been built on an electric vehicle prospect's behavioural intention due to the green marketing initiatives. Finally, theoretical contributions and implications for green marketing have been analysed, and their applicability for the electric vehicle industry is examined.

Keywords: Electric Vehicles, EV, Green Marketing, Sustainability

INTRODUCTION

The prime focus now for humanity is to find more sustainable ways to produce, consume and live as we have limited resources in the earth. However, sustainability was once a vision of the future shared by an environmentally-orientated few (Baker, 2003). The publication of the Brundtland Report, 'Our Common Future' in 1987 (Brundtland, 1987), brought this issue to the mainstream. In the wake of the 1992

Rio Earth Summit, the world's governments and major corporations have increasingly adopted the pursuit of sustainability as a goal. The real challenge lies in turning these good intentions into meaningful progress. This paper will delve deep into the progress of sustainability in the automotive field and the prospect of green marketing in better adoption of Electric Vehicles. Green marketing is defined as the holistic management process responsible for identifying, anticipating, and satisfying customers and society's needs for profitably and sustainably (Brundtland, 1987).

In 1900 about 40% of cars were electric, 38% ran on steam, and only 22% ran on gasoline. Now, as we are in the 2020s we are rediscovering the electric car (EV History, 2021). How could the electric car become so popular to all, but vanish by 1935? Why were most of the first cars were electric and what happened to them? Even the first Porsche designed by Ferdinand Porsche was an electric one and it was unveiled in 1898.

Thomas Davenport built the first practical electric vehicle (EV) in 1835 (Morimoto, 2015). Surprisingly this was almost 30 years after the first introduction of a hydrogen car. The gasoline engine did not come about until 1870. The first production car was made in 1885 (Benz) by Karl Benz cars company, the current Mercedes-Benz. At that time, electric vehicles were seen as the best way forward in personal transport as they were quiet, comfortable to drive and required relatively little effort to run. Besides, electric cars were perfectly fit for short trips around the city. Big names such as Ferdinand Porsche and Thomas Edison went all-in on the electric trend. Porsche came up in 1898 with an electric model known as the loaner Portia one year later, Edison set out in the mission to make better longer-lasting batteries for cars. He believed that this form of transport was the future. Despite many attempts, he ultimately abandoned this vision. A decade later, an EV was seen as an expensive novelty. It looked like a machine for the rich and not for the common man. To travel to and fro as pleased, electric cars needed to be affordable yet mass-produced. Henry Ford, the founder of Ford Motors and Thomas Edison, experimented with a superior battery. Henry Ford quoted Edison's works in the January 11, 1914 issue of the New York Times magazine. Mr Ford said "The fact is that Mr Edison and I have been working for some years on an electric automobile which would be cheap and practicable (Strohl, 2020). Cars have been built for experimental purposes, and we are satisfied now that the way is clear to success. So far, the problem has been to build a storage battery of lightweight that would operate for long distances without recharging. Mr Edison has been experimenting with such a battery for some time." The details of what happened next are pretty sketchy—eventually, the project fell apart. General Motors EV one in the 1990s was the next large attempt, which failed too. But as we all know today, the electric car is finally here After seeing what Tesla has done, major manufacturers such as Volkswagen (VW), BMW, Renault, Toyota, Volvo, Aston Martin, General Motors, Jaguar and Land Rover have pledged to go electric.

We all know that the advent of the electric vehicle is quite inevitable. The reasons for the beginning are far too many. The CO_2 level is increasing due to the greenhouse gas emissions by the internal combustion vehicles. This increase is making the world more difficult to live for the habitats. Secondly, the gradual increase in CO_2 levels across the globe is also creating global warming, increasing the seawater level and endangering millions of people's lives who live in low areas across continents. Thirdly, a gradual increase in the fuel price is making combustion ignition vehicles more and more expensive. Fourthly, the depleting oil reserve will significantly pressurize the automotive industry, heavily dependent on proved oil reserve. Keeping in view the points above, we can easily make out that the electric vehicles will be a One-Stop solution for all the problems to a great extent. If we have an electric solution for all the transportation needs, we will check the CO_2 pollution. As per U.S. Energy Information Administration (EIA, 2020), transportation contributes 28% of the fossil fuel burning, and thus the impact of electrification on fossil fuel consumption is immense.

We also know, marketing has received a lot of criticism. Consumers have little unfavourable attitudes towards marketing practices. Marketing has been criticized for harming consumers by deceptive claims and practices. The false promise (Polonsky, 2001) of more value than can be delivered or wrongly persuaded to buy something we don't need or purchase unsafe and substandard products are examples of such practices. Increasing demand has also led to environmental consequences. Harmful marketing practices have also hurt businesses with unfair competitive advantages and created entry barriers. Movements by consumers and environmentalists have begun with a demand that Companies Act more responsibly. Green marketing solutions have shown a lot of promise by holistically showing how to promote stability by reducing and recycling waste, greening the supply chain, saving energy, and innovating new products. The unique value-added benefits make consumers feel better and more loyal to those brands. The societal issues like the increasing CO_2 level, global warming and depleting oil reserves are forcing the automotive industry to go electric, thus creating green marketing opportunities. The green marketing for Electric Vehicles can bring in competitive advantage by earning customers' trust and loyalty. The EV makers may leverage the principles of green marketing to enhance the penetration of electric cars.

Carlsen (2014) proposes that wonder in inquiry unfolds as a two-fold movement between receptive appreciation and self-transcendent search. We chart wonder's course in four stages or "moments" of arousal, expansion, immersion, and explanation. This paper describes the moment of arousal, evolution, immersion and theory building from the electric vehicle market perspective. We have observed that the EV were available in the market even more than a century back. They were an integral part of of the early automotive industry. However, the mass adoption of these vehicles never happened due to various reasons. There were three attempts by auto original equipment manufacturers (OEMs) to push this technology in the market, and all

the time, the shots never brought the desired outcome. The quest for the answer, why the electric vehicles failed to repeatedly gain consumer preference, was the stage of arousal. This research paper reviews numerous research philosophies and green marketing methods and develops a theory on the green marketing mix required to push electric vehicle adoption.

In the Electric Vehicle (EV) market expansion context, there is a scarcity of research to examine Green Marketing's impact on the adoption of Electric Vehicles in the marketplace. The present study attempts to find a relationship between the penetration of EVs over internal combustion vehicles and green marketing activities. Hence the objectives of the present study are- 1) Examine the different ontological assumptions of green marketing across various product categories through literature review. 2) Develop a conceptual theory on an electric vehicle prospect's behavioural intention due to the green marketing interventions.

THEORETICAL FRAMEWORK WITH LITERATURE REVIEW

In this section the relevant researches are briefly discussed in areas like Green Promotion, Fear Appeal, Ecological conscious appeal, Green branding, Educated and rich early targeting one by one as shown in the schematic diagram of the concept (Fig. 1)

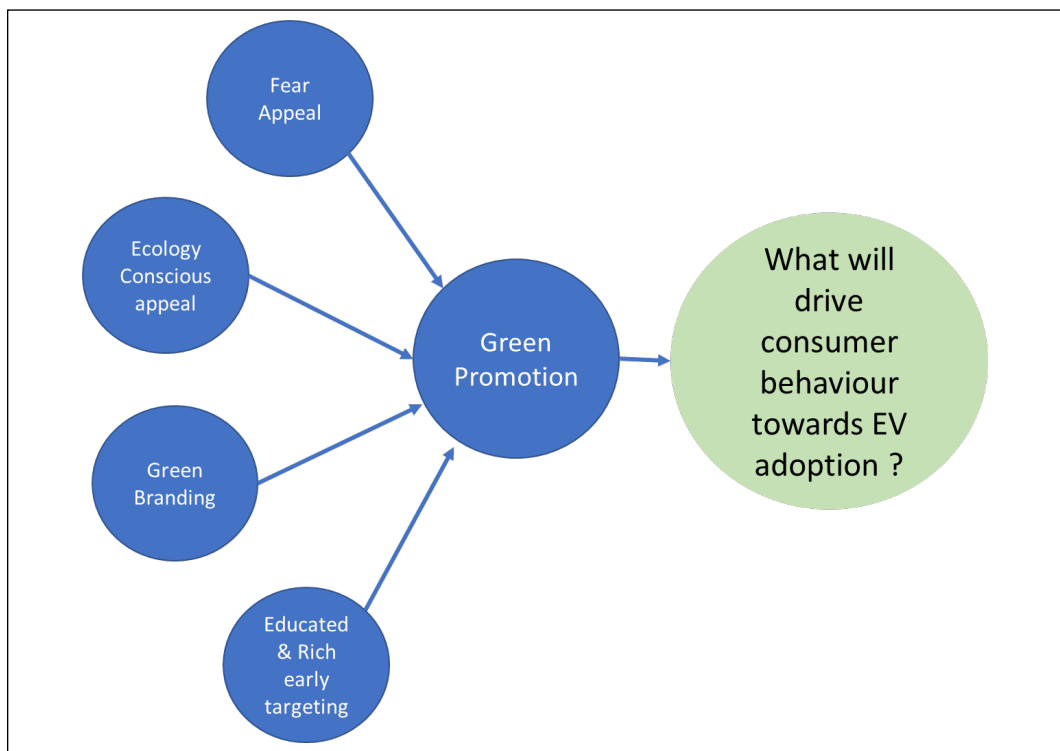


Fig. 1

GREEN PROMOTION

Public opinion polls consistently show that consumers prefer to choose a green product over a less environment-friendly one when all other things are equal. Those “other things” are rarely equal in the minds of consumers (Ginsberg, 2004). This paper’s ontology revolves around the belief that when consumers are forced to decide between product attributes and helping the environment, the environment seldom wins. Most consumers will not sacrifice their needs for just being green. This paper further argues that green products’ hopes have also been shattered by the perception that such products are of inferior quality or don’t deliver on their environmental promises. In other words, green products must match up against non-green products to earn consideration from the vast majority of consumers. Many questions may run through the minds of automotive customers, before deciding in favour of an EV. The questions revolve around the price, driving range and charging rate etc. (Yang, 2018). The adverse experience of consumers on green products and green marketing’s hollow promises created apprehension in green automotive customers. Thus, the green promotions of the electric vehicles need to be dealt with a lot of care. The green promotion’s first objective will be to irradiate the apprehensions of the consumers towards green products. The next aim will be to promote the greenness of the electric vehicles, the superior product attributes, the excellent quality of service, the range and the reduced total operation cost. The green promotion towards the adoption of Electric Vehicles will help change consumer behaviour towards such vehicles. However, some of the other research papers also indicate that green promotion can be more effective if specific appeals are leveraged for different sets of potential consumers. We will theorize those appeals towards the adoption of electric vehicles. (Rex E & Baumann, 2007) suggests that green promotion should learn from conventional marketing to reach a broader range of customers, working with the marketing mix of price, place, and promotion. (Kinoti M.W., 2011) iterates that the success of green promotion is not as easy as it sounds. It has several weaknesses, including colossal cost, long lead time, the promoted product benefits’ intangibility, and multi-stakeholder alignment (general public, employees, retailers, government, environmental groups, and suppliers. Any group can make the exercise futile.

Prakash, A.(2002) narrates that the green promotion needs to manipulate the marketing mix (product, price, place and promotion) and requires a careful understanding of public policy processes. Yazdanifard, R. & Mercy, I. E., 2011 state in their work that there is a significant influence of environmental knowledge on consumer ecological attitude. Consequently, the green promotions of green products gain satisfied customers. Our suggested proposition in the context of the study is:

P1: Green Promotion is a significant determinant to drive consumer behaviour towards Electric Vehicle Adoption

FEAR APPEAL

The marketers used fear appeal time and again as a part of the green campaign across product ranges. In these campaigns, the grave consequences of not using green products were highlighted to consumers. The fear appeal campaigns have been very effective for some products and have not succeeded in some areas. Study conducted by (Shen, 2020) examined how fear appeals (moderate vs. high) and temporal frames (proximal vs. distal) interactively influenced consumers' attitude and purchase intention in the framework of eco-friendly clothing advertising. The research suggests that companies can create campaigns utilizing fear appeals presented in a proximal or distal frame to target less involved consumer segments with caution. These campaigns have the potential to foster a favorable consumer attitude toward eco-friendly brands and practices, ultimately promoting pro-environmental behaviors in our society.

In an automotive scenario, the increase of the CO₂ levels in the environment is a significant fear factor. The current CO₂ level in the atmosphere is 409.8 ppm (NOAA Climate, 2020). (Azuma, 2018) stated that if the CO₂ level reaches 500 ppm, human beings will suffer increased heart rate, change in heart rate variability, increased blood pressure, and increased peripheral blood circulation. These are incredibly harmful symptoms for any living being. The sole existence of life on the earth will be a challenge. If the green campaign highlights these factors, it may appeal to a set of more or less involved consumers and drive them to adopt electric vehicles. Laroche, M., Toffoli, R., Zhang, Q., & Pons, F., 2011 further argues that the fear appeal advertisements have a varied effect on change of attitude for different communities of customers. Williams, K. C., 2012 advocated that more impactful fear appeals result from greater fear arousal. The subsequent market communication of the consequences and recommendations to reduce the negativity is absolute necessity for garnering the full impact of such campaigns. Intelligent use of fear appeal in brand communication can have positive effects on attitude change and action of a consumer (Ray, M.L., & Wilkie, W.L., 1970). Our suggested proposition in the context of the study is:

P2: Fear Appeal is a significant contributor to drive Green Promotion

ECOLOGY CONSCIOUS APPEAL

Consumers in many developed countries, including the United States, the United Kingdom, Germany, France and the Scandinavian countries have become extremely ecological conscious. They continuously demand products which are environment friendly and do not harm the ecology. If we observe the automotive industry, we will find that the Scandinavian countries have the highest penetration of electric vehicles. In one of the Scandinavian countries, Norway, the EV market share is more than 50% (Cleantechnica, Nov 2020). From the example of the Scandinavian countries, we may clearly understand that ecology-conscious customers are the early adopters of electric vehicles. (Laheri, 2014) in their study suggested that all the stakeholders,

i.e. marketers, consumers and government, were concerned for the environment. The research also indicated that a positive correlation exists between the environmental factors and consumers' behaviour towards green products. The result concludes that people are concerned about the environment and are ready to change their behaviour to minimize the environment's effect. Perceived ecological value also has profound implications on a brand's perceived functional, economic, emotional, and social value (Koller, M., Floh, A., & Zauner, A., 2011). The consumer believes that they can help solve environmental problems by themselves if they are made aware through the good green marketing campaigns (Roberts, J.A, 1996). This paper further indicates the ever-evolving customer behaviour towards ecology. The retailers have a significant role in building a store image that reflects their green ecology credentials, as a proxy for the quality and nature of merchandise they carry. (Phau, I., & Ong, D., 2007). Our suggested proposition in the context of the study is:

P3: Ecology Conscious Appeal is a significant contributor to drive Green Promotion

GREEN BRANDING

In the early days, green branding encompassed only marketing communications. The communications used to be highlighting only the green aspect of a usual product. Customers used to consider search communication as a gimmick and never used to take these communications seriously. However, the paradigm of green marketing has evolved over the years. Today the green marketing is much more holistic and is much beyond a mere green campaign. In an automotive scenario, the green branding means the green product, i.e. an electric vehicle and the whole ecosystem around these type of vehicles, including designing, sourcing, producing, logistics selling & servicing etc.

According to the study of (Polonsky, 2001), responsible green branding has evolved into a complex, integrated: strategic, and tactical process. It is a holistic approach rather than a simple marketing hype or tactical opportunism practised by some. Green marketing becomes part of the "cultural fabric" that binds an organization together at a fundamental level. The corporate mindset towards green branding leads to the competitive advantage in a marketplace. A green positioning strategy can also create a positive brand perception and support significant positive attitude effects of functional and emotional green positioning (Hartmann, P, Ibáñez, V.A., & Sainz, F.J.F, 2005). According to the research study of (Gong, S., Sheng, G., Peverelli, P., & Dai, J., 2020), green brand positioning tickles consumers' stereotyping process, leading to favourable consumer response. Doszhanov, A., & Ahmad, Z.A, 2015, argues that there are substantial connections between green brand awareness, trust, perceived value, and customer's intention to use green products. However, green brand image had no significant relationship with customer's intention to use green products. Our suggested proposition in the context of the study is:

P4: Green Branding of the overall organization is a significant contributor to drive Green Promotion

THE PRODUCT (ELECTRIC VEHICLE)

The proposed model of how the green promotion would drive the adoption of electric vehicle with the consumers is shown in Fig. 2.

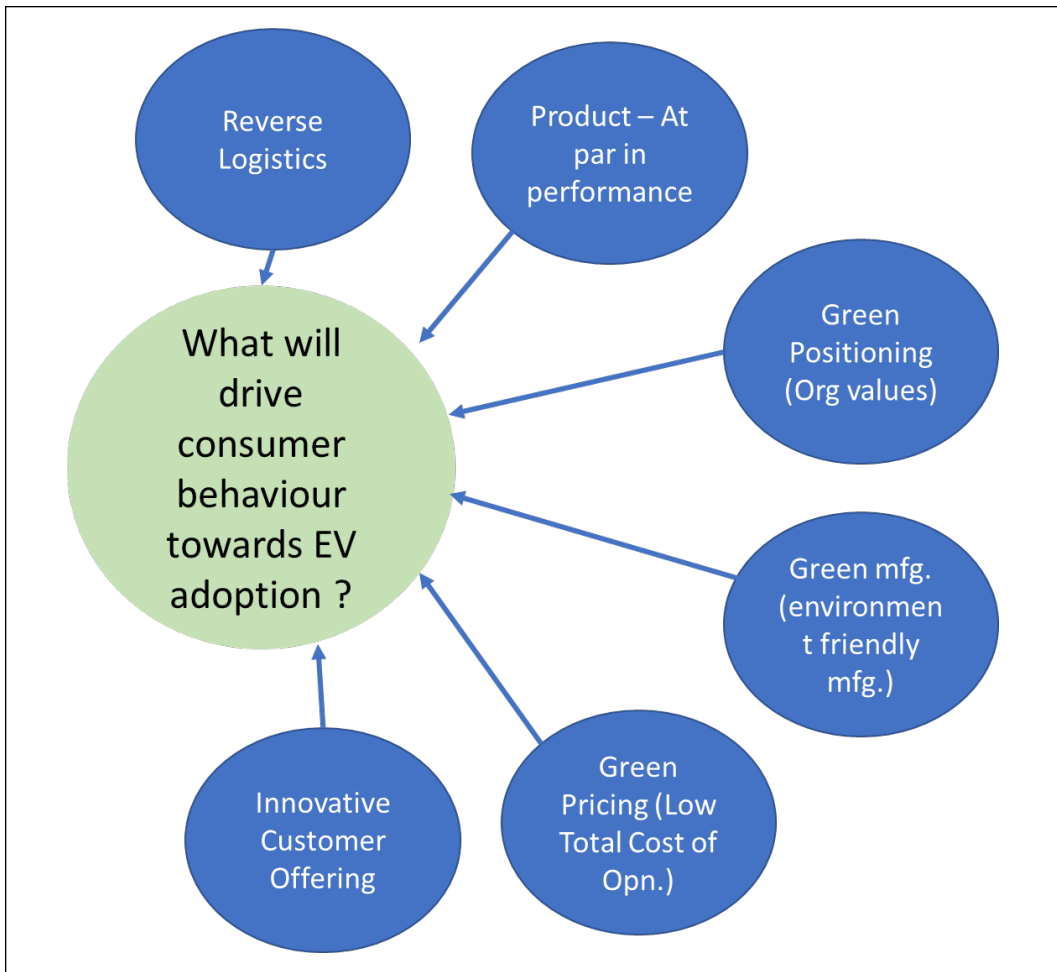


Fig. 2

Product is the core of any marketing activity. Green marketing of electric vehicles is no exception. We are aware that electric vehicles do not consume fossil fuels and thus do not produce greenhouse gases. These vehicles are truly green. The green marketing principles can easily apply for electric vehicles. However, the problem is not as simple as this. For the effective outcome of green marketing, the product needs to be on par in performance with the non-green products. In this scenario, the electric vehicles need to be on par in performance, quality, range, sales experience, service experience, price and maintenance cost with fossil fuel vehicles. (Ginsberg, 2004) suggested that hopes for green products have been hurt by the perception that such products are of lower quality or didn't deliver on their environmental promises. In his survey, conducted

in the year 2002, 41% of consumers said they did not buy green products because they were worried about the diminished quality of eco-friendly versions. Therefore, the product performance parameters need to be carefully designed for getting the attention of the probable consumers. Kim, S., Lee, J., & Lee, C., 2017 advocated that the product attributes like driving range, and the number of models available in markets directly implied the market share of electric vehicles. Lee, U., Kang, N., & Lee, I, 2019's proposed reliability-based design for market systems framework finds the optimal target reliability to maximize an EV maker's company profit. They are thus indicating product reliability as a critical factor for an EV manufacturer's commercial success. Chang, N.J., & Fong, C.M., 2010 affirms that green product quality is positively associated with green customer satisfaction and loyalty in their research outcome. Market demand for green products is dependent on green product innovation and performance (Lin, R.J., Tan, K.H., & Geng, Y., 2013). Our suggested proposition in the context of the study is:

P5: The Green Product (EV) with at par performance is a significant determinant to drive consumer behaviour towards Electric Vehicle Adoption

GREEN POSITIONING (ORGANISATIONAL VALUES)

Green positioning of the organizational values is critical for changing the attitude of consumers towards a brand. Organizations allocate significant resources to introduce environmentally sustainable new products. Organizations invest in these ideas not only to show their commitment to sustainability but also to ensure their long-term survival. The green positioning of organizations helps them change the paradigm of customers. In an automotive scenario, there are two types of auto OEMs. The first set of auto OEMs are the traditional ones selling majorly internal combustion vehicles. These OEMs need to do green positioning with much greater detail. These auto OEMs thrive on selling internal combustion vehicles and are not known as green manufacturers. Auto companies like GM, Ford, Renault, VW fall into this category. However, the other type of auto OEMs is the next generation manufacturers of only electric vehicles. These next-gen manufacturers are the borne green OEMs and do not need to do separate green positioning. Auto OEMs like Tesla, Nextev, Faraday Future fall into this category.

Study conducted by (Olsen, 2014) investigated how the introduction of green new products changes attitude toward the brand. The study also finds that the number of green messages, the product type, and their source credibility influence green new products ability to change brand attitude. The green positioning gives a renewed identity for an existing brand.

Polonsky (2001) suggests that truly green marketers demonstrate strategic greening by ensuring that all activities and behaviours thoroughly incorporate environmental

values. The accomplishment of a company taking this position must match its rhetoric and consumer expectations. The results of Chandra, K., Takaya, R., & Ramli, A.H., 2019 research indicate that green brand positioning can increase brand image the most. Our suggested proposition in the context of the study is:

P6: Green Positioning of organizational values is an important determinant to drive consumer behaviour towards Electric Vehicle adoption

GREEN MANUFACTURING

Ginsberg (2004) suggests that the lean green strategy is one in which greenness tends to be exhibited mostly in product development, design and manufacturing. Holistic philosophies shape extreme Green enterprises. Environmental issues are integral parts of the business and product life-cycle processes of these companies. Greenness is a major driving force behind these companies since day one. Practices involve life-cycle pricing approaches, total-quality environmental management and manufacturing for the environment.

A green consumer who avoids products causes significant damage to the environment during manufacturing, use, and disposal. They avoid products which consume a disproportionate amount of energy and cause unnecessary waste. (Elkington, 1994).

Our study will investigate automotive manufacturers differentiated thinking to bring green manufacturing into existence. Some of the global automotive manufacturers have taken significant initiatives to make the manufacturing process green. These auto OEMs have analysed their manufacturing processes from all angles and initiated green initiatives across the value chain. These initiatives encompass manufacturing processes, machines, power consumption, supply chain, IOT, waste disposal, recycling, reusing, electricity generation, etc. Companies also have focused on value engineering to reduce the overall weight of vehicles. Companies took the initiative to reduce the wastes of any nature across the value chain. Some of the next-generation automotive companies like Tesla have even gone forward to create their own solar electricity plants to feed the manufacturing facility. The first charging of electric vehicles happens through the electricity produced by solar panels. The green manufacturing is gaining momentum across automotive manufacturers. This is Helping automotive OEMs create strong green positioning for themselves. However, Michaud, C., & Llerena, D., 2011 study indicates that remanufactured product worth is less for the customers unless they are informed about their respective environmental impacts. Consumers are less likely to pay a premium for the green (i.e. remanufactured) product. This finding may limit the auto industry's attempt to convert old traditional vehicles into electric vehicles. Rusinko, C, 2007 suggests that environmentally sustainable manufacturing may be positively associated with the organizations' competitive performance. Rehman, M.A., Seth, D., & Shrivastava, R.L.(2016) study iterates the significance of channelizing

green marketing initiatives to improve environmental, operational and financial performance. Our suggested proposition in the context of the study is:

P7: Green Manufacturing is a significant determinant to drive consumer behaviour towards Electric Vehicle Adoption

GREEN PRICING (TOTAL COST OF OPERATION)

Polonsky (2001) study indicates that while green products are often “priced” higher than nongreen products. This does not always mean they cost more, especially when one considers all associated costs. Usually, green goods have a higher initial cost but lower long-term costs. Unfortunately, relatively more extended payback period and higher upfront costs discourage the purchase and create an entry barrier for many consumers.

In the electric vehicle industry, the problem is very similar. The higher initial cost of electric vehicles creates an entry barrier for usual automotive consumers. However, the running cost of electric vehicles is substantially lower than the internal combustion vehicles. Therefore, in the long run, it makes sense for buying electric vehicles. It is thus, imperative to change the mindset of customers through green pricing innovations. The higher initial investment for buying new electric vehicles can be offset by offering leasing solution for customers. Tesla uses this kind of pricing innovation globally, and even Tata Motors does this for the Indian market. This strategy has worked well in some geographies like the United States of America. Thus, the green pricing supported by green marketing helps in driving consumer behaviour towards EV adoption. Sierzechula, W., Bakker, S., Maat, K., & Van Wee, B. (2014) found that financial incentives positively influence a country’s electric vehicle market share. Helveston, J.P., Liu, Y., Feit, E.M., Fuchs, E., Klampfl, E., & Michalek, J.J. (2015) find in their research that the same pricing incentive may have different adoption impact in other countries. Hong, Z., Wang, H., & Yu, Y. (2018) research results show that companies should adopt differentiated pricing strategies for consumers with differential purchase behaviours. The traditional automotive OEMs may use this pricing mechanism to drive more significant EV share in their portfolio. Our suggested proposition in the context of the study is:

P8: Green Pricing is a significant determinant to drive consumer behaviour towards Electric Vehicle adoption

INNOVATIVE CUSTOMER OFFERING

The green mindset is entirely different from traditional wisdom. Thus, while adopting a green perspective, an organization must behave differently. It must challenge the very nature of its business and evaluate its relationship with the customer. The holistic consideration of customer offerings and bringing in innovations in the offerings is

the need of the hour to satisfy customer needs. The value creation in this process should appeal to the customer, which will increase the pull of the product or service in the market place. As (Peattie, 1999) suggested, this might involve going so far as to challenge established assumptions and ways of thinking by asking: Do consumers need to actually “own” products, or are there other ways of delivering want satisfying capabilities?

This new mindset is a complete shift of paradigm from the current wisdom of automotive OEMs. This can be explained for the automotive scenario with a simple example. A vehicle sells as a product in the traditional auto market. The consumer needs a vehicle for transportation of goods or people. If the new offering by one of an auto OEMs is transportation as a service, the customers may not have to spend a lot of money initially to buy a car. The consumers can get their transportation service at much lower expenses and without any initial capital investment. Secondly, because of the multiple usages of these vehicles, the utilization will be more. Higher utilization of such asset will bring down the cost burden to individual customers. Many auto OEMs have embraced this idea and have come up with car-sharing platforms. These innovative offerings will drive customer behaviour towards the adoption of electric vehicles.

Lin, R.J., Chen, R.H., & Huang, F.H.(2014) research results suggest that firms should make more significant efforts to identify customer needs and focus on green products’ innovation. Alignment of the green initiatives with consumer values is necessary to satisfy market demand and ensure sustainable performance. Elmquist, M., & Segrestin, B. (2009) examines in their research paper how the automotive industry can foster innovative capabilities in established R&D processes and drive demand. Our suggested proposition in the context of the study is:

P9: Innovative Customer offering is a significant determinant to drive consumer behaviour towards Electric Vehicle Adoption

GREEN REVERSE LOGISTICS

Polonsky (2001) had advocated that integrated transportation systems, the internet, and other initiatives have reduced distribution activities’ environmental impact. However, the most complex component of distribution is the area of reverse logistics. Firms move “used” goods from the consumer back up the distribution channel to the firm. This innovation was partly motivated in the early 1990s by Germany’s new first-phase regulations requiring firms to take back waste. The second phase of these regulations went further, requiring firms to take back unwanted products as well.

Reverse logistics is an essential component for the adoption of electric vehicles. The battery is the component of an electric vehicle which needs replacement after intervals. These batteries are recycled to reduce the impact on the environment. Recycling battery also reduces the overall cost of batteries for the consumers. The

lithium-ion batteries, used in EVs, are recyclable to a great extent. If an efficient green reverse logistics is in place, electric vehicles' overall cost will go down. The battery is the costliest component of an EV, and thus the impact of the reverse battery logistics will have a significant effect on consumer behaviour. Secondly, green logistics will firmly establish the green positioning of the automotive OEM. The green reverse logistics has real potential to drive customer behaviour towards the adoption of electric vehicles. Gu, H., Liu, Z., & Qing, Q. (2017) research suggests higher battery recycling may decrease the EV manufacturer's expected utility. Alamerew, Y.A., & Brissaud, D (2020) research concludes that reuse strategies such as remanufacturing present a huge market potential for recovering electric vehicle batteries shortly. This reverse logistics may bring positive sentiments in the customer's mind and fuel the new EVs' demand. A transparent secondary market could enable better reverse sourcing of EV batteries for repurposing and recycling and thus drive convenience for EV customers (Bergh, W., 2020). Garrido-Hidalgo, C., Ramirez, F. J., Olivares, T., & Roda-Sanchez, L., (2020) proposed a heterogeneous IoT network deployment to recover Electric Vehicle Battery packs in pursuit of a digital Circular Supply Chain information infrastructure. Our suggested proposition in the context of the study is:

P10: Green Reverse Logistics is a significant determinant to drive consumer behaviour towards Electric Vehicle Adoption

THEORY BUILDING

Varpio (2019) suggested two approaches to research; the objectivist deductive approach (from theory to data) and the subjectivist inductive approach (from data to theory). The theory building framework of Varpio is given Fig.3.

This paper uses the deductive approach in finding the green marketing interventions required to drive consumers to adopt Electric Vehicles (EV) instead of internal combustion vehicles. The present study proposes a comprehensive theory for the determinants of electric vehicle adoption. The theory has been conceptualized to establish the relationship between the consumer preference to buy an electric vehicle and the green marketing interventions that may influence the customer behaviours. The study explores the understanding of several paradigms of the green marketing interventions used in various industries. Reviews of multiple papers in the field have been done to determine the best possible green marketing interventions suitable for the automotive industry. For electric vehicle industry, the green marketing dimensions like: (1) product quality (2) Positioning (3) Manufacturing (4) Pricing (5) Innovative customer offerings, (6) Reverse logistics & (7) Promotion, play a pivotal role in influencing consumer's behaviours towards Electric vehicle adoption. The green marketing promotions consist of various ontological assumptions like (1) Fear Appeal (2) Ecology conscious appeal (3) Green branding & (4) Educated and reach (early entrants) targeting.

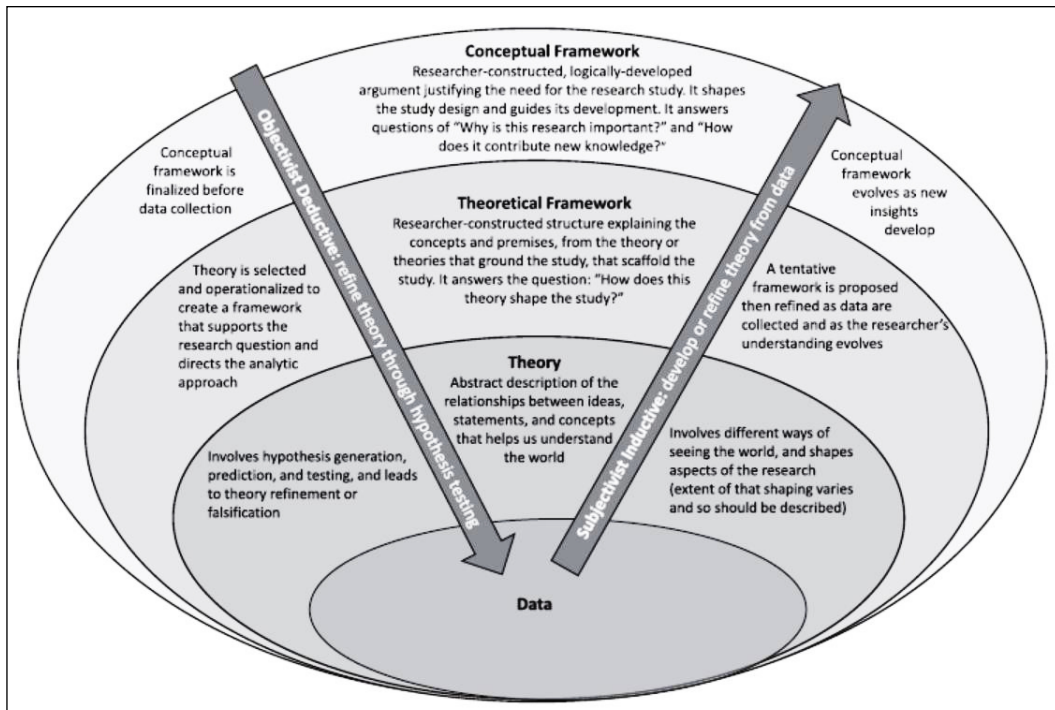


Fig. 3

** Source: (Varpio, 2019)

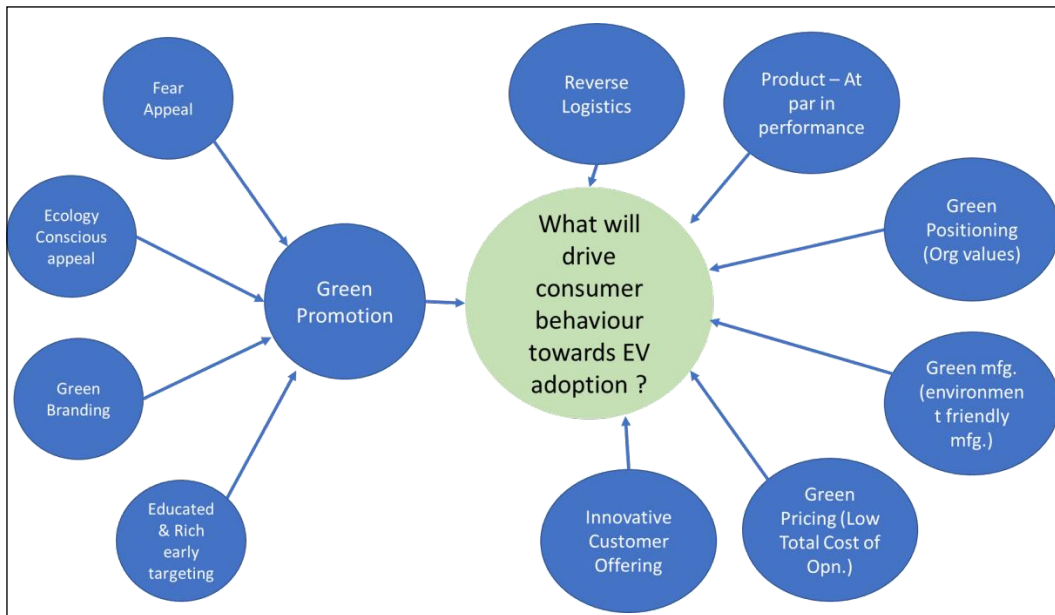


Fig. 4

CONCLUSION AND FUTURE RESEARCH WORK

The automotive industry's focus to push on Electric Vehicles to the market is at its peak now to combat global warming and increasing CO₂ levels. This journey had not been smooth for the EV market as consumers rejected electric vehicles several times earlier. This research focuses on understanding the several green marketing elements and their applicability to the auto industry towards penetration of EVs in the market. The present study has developed a theory that may establish the relationships of green marketing elements and consumer behaviour towards EV adoption. Future research should examine the proposed theory and the given propositions in the present study. Hence, this study contributes to the investigation and reassessment of Green marketing interventions towards EV adoption. Further studies should also investigate the impact of innovative sales interventions that may fuel consumer preference for electric vehicles.

REFERENCES

- [1] Carlsen, A., & Sandelands, L. (2014). First passion: Wonder in organizational inquiry. *Management Learning*, 46(4), 373–390. doi:10.1177/1350507614533756.
- [2] Varpio, L., Paradis, E., Uijtdehaage, S., & Young, M. (2019). The Distinctions Between Theory, Theoretical Framework, and Conceptual Framework. *Academic Medicine*, 95(7), 989–994. doi:10.1097/acm.0000000000003075.
- [3] Olsen, M.C., Slotegraaf, R.J., & Chandukala, S.R. (2014). Green Claims and Message Frames: How Green New Products Change Brand Attitude. *Journal of Marketing*, 78(5), 119–137. doi:10.1509/jm.13.0387.
- [4] Jena, R. (2020). An empirical case study on Indian Consumers' Sentiment towards Electric Vehicles: A Big Data Analytics Approach. *Industrial Marketing Management*, 90, 605616. doi:10.1016/j.indmarman.2019.12.012
- [5] Laheri, V.K., Dangi, H., & Vohra, A. (2014). Green Marketing: Development of Construct and Its Evolution. *Asia-Pacific Journal of Management Research and Innovation*, 10(2), 147–155. doi:10.1177/2319510x14536220.
- [6] Shen, B., & Kim, Y. (2020). Green With Fear: Fear Appeals and Temporal Framing in EcoFriendly Clothing Advertising. *Clothing and Textiles Research Journal*. doi:10.1177/0887302x20968821.
- [7] Grubor, A., & Milovanov, O. (2017). Brand Strategies in the Era of Sustainability. *Interdisciplinary Description of Complex Systems*, 15(1), 78–88. doi:10.7906/indcs.15.1.6 .
- [8] Kang, S., & Hur, W. (2011). Investigating the Antecedents of Green Brand Equity: A Sustainable Development Perspective. *Corporate Social Responsibility and Environmental Management*, 19(5), 306–316. doi:10.1002/csr.281.
- [9] Lehner, M., & Halliday, S.V. (2014, February). Branding sustainability: Opportunity and risk behind a brand-based approach to sustainable markets*. Retrieved December 27, 2020, from <https://uhra.herts.ac.uk/bitstream/handle/2299/14922/906954.pdf?sequence=2&isAllowed=y>

- [10] Visser, W., & Brundtland, G.H. (n.d.). Our Common Future ("The Brundtland Report"): World Commission on Environment and Development. *The Top 50 Sustainability Books*, 52-55. doi:10.9774/gleaf.978-1-907643-44-6_12 .
- [11] Polonsky, M.J., & Rosenberger, P.J. (2001). Reevaluating green marketing: A strategic approach. *Business Horizons*, 44(5), 21-30. doi:10.1016/s0007-6813(01)80057-4
- [12] Ng, P.F., Butt, M.M., Khong, K.W., & Ong, F.S. (2013). Antecedents of Green Brand Equity: An Integrated Approach. *Journal of Business Ethics*, 121(2), 203-215. doi:10.1007/s10551-013-1689-z
- [13] Baker, M.J. (2003). *The marketing book*. Oxford, MA: Butterworth Heinemann.
- [14] U.S. Energy Information Administration - EIA - Independent Statistics and Analysis. (n.d.). Retrieved December 28, 2020, from <https://www.eia.gov/energyexplained/use-ofenergy/transportation-in-depth.php>.
- [15] Ferdinand Porsche. (2020, December 27). Retrieved December 30, 2020, from https://en.wikipedia.org/wiki/Ferdinand_Porsche.
- [16] Strohl, D. (n.d.). Ford, Edison and the Cheap EV That Almost Was. Retrieved December 30, 2020, from <https://www.wired.com/2010/06/henry-ford-thomas-edison-ev/>
- [17] Ginsberg, J.M., & Bloom, P.N. (n.d.). Choosing the Right Green Marketing Strategy. Retrieved January 01, 2021, from https://www.academia.edu/5130041/Choosing_the_Right_Green_Marketing_Strategy.
- [18] Yang, S., Zhang, D., Fu, J., Fan, S., & Ji, Y. (2018). Market Cultivation of Electric Vehicles in China: A Survey Based on Consumer Behavior. *Sustainability*, 10(11), 4056. doi:10.3390/su10114056
- [19] Azuma, K., Kagi, N., Yanagi, U., & Osawa, H. (2018). Effects of low-level inhalation exposure to carbon dioxide in indoor environments: A short review on human health and psychomotor performance. *Environment International*, 121, 51-56. doi:10.1016/j.envint.2018.08.059
- [20] Climate Change: Atmospheric Carbon Dioxide: NOAA Climate.gov. (2020, August 14). Retrieved January 03, 2021, from <https://www.climate.gov/newsfeatures/understanding-climate/climate-change-atmospheric-carbon-dioxide>
- [21] About the Author Dr. Maximilian Holland Max is an anthropologist. (2020, December 06). Norway In November: EV Market Share At 80%, Fossils Disappearing. Retrieved January 03, 2021, from <https://cleantechnica.com/2020/12/03/norway-in-november-evmarket-share-at-80-fossils-disappearing/>
- [22] Elkington, J. (1994). Towards the Sustainable Corporation: Win-Win-Win Business Strategies for Sustainable Development. *California Management Review*, 36(2), 90100. doi:10.2307/41165746.
- [23] Peattie, K. (1999). Rethinking Marketing: Shifting to a Greener Paradigm. *Greener Marketing: A Global Perspective on Greening Marketing Practice*, 57-70. doi:10.9774/gleaf.978-1-907643-20-0_5.
- [24] Rex, E., & Baumann, H. (2007). Beyond ecolabels: what green marketing can learn from conventional marketing. *Journal of cleaner production*, 15(6), 567-576.
- [25] Kinoti, M.W. (2011). Green marketing intervention strategies and sustainable development: A conceptual paper. *International journal of business and social science*, 2(23).

- [26] Prakash, A. (2002). Green marketing, public policy and managerial strategies. *Business strategy and the environment*, 11(5), 285-297.
- [27] Yazdanifard, R., & Mercy, I. E. (2011, May). The impact of green marketing on customer satisfaction and environmental safety. In *2011 International Conference on Computer Communication and Management* (Vol. 5, No. 1, pp. 637-641).
- [28] Laroche, M., Toffoli, R., Zhang, Q., & Pons, F. (2001). A cross-cultural study of the persuasive effect of fear appeal messages in cigarette advertising: China and Canada. *International Journal of advertising*, 20(3), 297-317.
- [29] Williams, K.C. (2012). Fear appeal theory. *Research in Business and Economics Journal*, 5(1), 1-21.
- [30] Ray, M.L., & Wilkie, W.L. (1970). Fear: The potential of an appeal neglected by marketing. *Journal of Marketing*, 34(1), 54-62.
- [31] Koller, M., Floh, A., & Zauner, A. (2011). Further insights into perceived value and consumer loyalty: A “green” perspective. *Psychology & Marketing*, 28(12), 1154-1176.
- [32] Roberts, J. A. (1996). Green consumers in the 1990s: profile and implications for advertising. *Journal of business research*, 36(3), 217-231.
- [33] Phau, I., & Ong, D. (2007). An investigation of the effects of environmental claims in promotional messages for clothing brands. *Marketing Intelligence & Planning*.
- [34] Hartmann, P., Ibáñez, V.A., & Sainz, F J.F. (2005). Green branding effects on attitude: functional versus emotional positioning strategies. *Marketing intelligence & planning*.
- [35] Gong, S., Sheng, G., Peverelli, P., & Dai, J. (2020). Green branding effects on consumer response: examining a brand stereotype-based mechanism. *Journal of Product & Brand Management*.
- [36] Doszhanov, A., & Ahmad, Z.A. (2015). Customers’ intention to use green products: The impact of green brand dimensions and green perceived value. In *SHS Web of Conferences* (Vol. 18, p. 01008). EDP Sciences.
- [37] Kim, S., Lee, J., & Lee, C. (2017). Does driving range of electric vehicles influence electric vehicle adoption?. *Sustainability*, 9(10), 1783.
- [38] Lee, U., Kang, N., & Lee, I. (2019). Selection of optimal target reliability in RBDO through reliability-based design for market systems (RBDMS) and application to electric vehicle design. *Structural and Multidisciplinary Optimization*, 60(3), 949-963.
- [39] Chang, N.J., & Fong, C.M. (2010). Green product quality, green corporate image, green customer satisfaction, and green customer loyalty. *African journal of business management*, 4(13), 2836-2844.
- [40] Lin, R.J., Tan, K.H., & Geng, Y. (2013). Market demand, green product innovation, and firm performance: evidence from Vietnam motorcycle industry. *Journal of Cleaner Production*, 40, 101-107.
- [41] Chandra, K., Takaya, R., & Ramli, A.H. (2019). The Effect Of Green Brand Positioning, And Green Brand Knowledge on Brand Image, And Green Purchase Intention in Green Products Consumers. *International Journal of Business and Management Invention (IJBMI)*, 8, 47-52.

- [42] Michaud, C., & Llerena, D. (2011). Green consumer behaviour: an experimental analysis of willingness to pay for remanufactured products. *Business Strategy and the Environment*, 20(6), 408–420.
- [43] Rusinko, C. (2007). Green manufacturing: an evaluation of environmentally sustainable manufacturing practices and their impact on competitive outcomes. *IEEE Transactions on Engineering Management*, 54(3), 445–454.
- [44] Rehman, M. A., Seth, D., & Shrivastava, R. L. (2016). Impact of green manufacturing practices on organizational performance in Indian context: an empirical study. *Journal of cleaner production*, 137, 427–448.
- [45] Sierczula, W., Bakker, S., Maat, K., & Van Wee, B. (2014). The influence of financial incentives and other socio-economic factors on electric vehicle adoption. *Energy Policy*, 68, 183–194.
- [46] Helveston, J.P., Liu, Y., Feit, E.M., Fuchs, E., Klampfl, E., & Michalek, J.J. (2015). Will subsidies drive electric vehicle adoption? Measuring consumer preferences in the US and China. *Transportation Research Part A: Policy and Practice*, 73, 96–112.
- [47] Hong, Z., Wang, H., & Yu, Y. (2018). Green product pricing with non-green product reference. *Transportation Research Part E: Logistics and Transportation Review*, 115, 1–15.
- [48] Lin, R.J., Chen, R.H., & Huang, F.H. (2014). Green innovation in the automobile industry. *Industrial Management & Data Systems*.
- [49] Elmquist, M., & Segrestin, B. (2009). Sustainable development through innovative design: lessons from the KCP method experimented with an automotive firm. *International Journal of Automotive technology and management*, 9(2), 229–244.
- [50] Gu, H., Liu, Z., & Qing, Q. (2017). Optimal electric vehicle production strategy under subsidy and battery recycling. *Energy Policy*, 109, 579–589.
- [51] Alamerew, Y. A., & Brissaud, D. (2020). Modelling reverse supply chain through system dynamics for realizing the transition towards the circular economy: A case study on electric vehicle batteries. *Journal of Cleaner Production*, 254, 120025.
- [52] Bergh, W. (2020). Mapping the European reverse logistics of electric vehicle batteries.
- [53] Garrido-Hidalgo, C., Ramirez, F.J., Olivares, T., & Roda-Sanchez, L. (2020). The adoption of Internet of Things in a Circular Supply Chain framework for the recovery of WEEE: The case of Lithium-ion electric vehicle battery packs. *Waste Management*, 103, 32–44.
- [54] Wikipedia. (2021, January 28). History of the electric vehicle. Retrieved February 10, 2021, from https://en.wikipedia.org/wiki/History_of_the_electric_vehicle.
- [55] F. (2021, January 12). Benz Patent-Motorwagen. Retrieved February 10, 2021, from https://en.wikipedia.org/wiki/Benz_Patent-Motorwagen.
- [56] Morimoto, M. (2015). Which is the first electric vehicle?. *Electrical Engineering in Japan*, 192(2), 31–38..

Impact of Union Budget on Nifty-50 Index and its Constituent Stocks

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Abstract: This project is undertaken to study the concept of event study. The subject for the event study is the impact of the Union Budget on the National Stock Exchange. The Union Budget 2019 has been taken for this study that came out on the 5th of July. The process followed for this study was that, the closing of the NIFTY-50 Index and the closing price of the shares of the 50 constituent companies of the NIFTY-50 has been taken. Then the returns of NIFTY-50 index and that of the individual constituent companies of NIFTY-50 has been calculated from the data for 300 days. The alpha and beta values have been calculated and with their help the normal and abnormal return has been calculated. Then the standard error has been calculated from the returns of the individual company and the NIFTY-50 index along with the standard deviation. Then the t-statistics has been calculated using the standard error and the abnormal return for all the 50 companies individually. Then it has been checked for each of the companies individually whether they have had any significant impact on the event using the t-statistics of the cumulative abnormal return. After that all the abnormal returns for the individual companies have been put together and the average abnormal return has been calculated for the 300 days of data. Then the t-statistics has been calculated to check whether the event of Union Budget Announcement had any significant impact on the NIFTY-50 index i.e. whether t-statistics of cumulative abnormal return is greater than of less than 1.96. From all the aforementioned data analysis, the study concludes that there is no significant impact of the event of Union Budget announcement on that of a NIFTY-50 index and its constituent stocks.

INTRODUCTION

EVENT STUDY

This article is based on the event study concept and involves the budget of 2019 which was announced on the 5th July, 2019. According to Investopedia “an event study is an empirical analysis performed on a security that examines the impact of a significant catalyst occurrence or contingent event on the value of that security”. In layman’s term it is the study of the impact of an event on the performance and return of the stocks. It elaborates on how a security is likely to react to a given event.

Stocks or shares are commonly sold by the companies so as to raise required capital from the public. They represent ownership of a fraction of the company. Stock

Exchanges, also called bourse or security's exchange, are basically market place where people, traders or stockbrokers can buy and sell the stocks. They are both virtual as well as real. The stock markets are basically divided into two types:

- I. **Primary Markets:** These are the markets where the stock is traded for the first time amongst the common public through IPOs or Initial Public Offering
- II. **Secondary Markets:** These are the markets where the stock that is already owned by investors/stockholders are bought and sold.

Some of the biggest stock exchanges by volume are New York Stock Exchange, NASDAQ, Tokyo Stock Exchange, Shanghai Stock Exchange, Hong Kong Stock Exchange, London Stock Exchange, EURONEXT, Shenzhen Stock Exchange, Toronto Stock Exchange and Bombay Stock Exchange (Simpson, 2021; Bhatiya, 2020).

Looking at the history of stock exchanges, the oldest proper stock exchange, the London Stock Exchange (LSE) was setup in England in the year 1773 and only after 19 years of its establishment New York Stock Exchange (NYSE) was established in the year 1792 (Simpson, 2021). But over time the NYSE has overtaken the LSE as the largest stock exchange in the world in terms of volume traded. In India we have two major stock exchanges i.e. The Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). In Asia, the BSE is the sixth largest stock exchange in terms of market capitalization with its market capitalization standing at a whopping US\$1.76 trillion as of June 2020. In the year 1875 a resolution was passed by a group of brokers to form an association protecting the status, character and the interest of the native stock brokers and shares and also for the use of a building or a hall for the use by the members of this association (Countinho, 2017). The Native Share and Stock Brokers Association was formally constituted through a contract dated 3rd December 1887 (Countinho, 2017). By 1957 it became the first exchange to be recognized by the Government of India under the Securities Contract Regulation Act (Countinho, 2017). It has around 18 indices out of which S&P SENSEX is the most widely used.

The National Stock Exchange or the NSE is the other major stock exchange in India. It has a market capitalization of US\$4.06 billion as of June 2020 (Carroll, 2020). It was formed in the year 1992 due to the Harshad Mehta scam which called for the major overhaul in the reforms of BSE (Bhatiya, 2020). Due to BSE's hardheadedness with regard to inducting reforms, the Government of India took drastic measures and created the National Stock Exchange. It started trading on the 4th of November 1994. It has around 13 broad market indices out of which the NIFTY-50 is the most widely used one (Wikipedia).

For the purpose of this study, NSE and its index NIFTY-50 has been taken into consideration.

UNION BUDGET

The Union Budget is the annual projection of the estimated financial plan of the Government's all the expected expenditure and revenue over the next financial year which starts from the 1st of April and ends on the 30th of March of the following year. The first Budget of colonial era was presented by James Wilson in the year 1860, who is also the founder of the global giant bank known as the Standard Chartered Bank (The Man Who Created India's First ever Budget, 2019). The first Budget of post-colonial rule was presented by R. K. Shanmukham Chetty in the year 1947 and the first budget of Republic of India was presented by John Mathai in 1950. The budget was presented at 5pm on the last working day of February until 1999 but was changed by Yashwant Sinha and was presented at 11am instead Times (2019). Up until 2016 the budget was presented on the last working day of February, but erstwhile Finance Minister, Mr. Arun Jaitley, however changed it to the first day of February. There is also an interim budget which is generally presented during the year of general elections because there is a possibility that the incoming government might change and they might want to make changes in the budget. In this case a full budget is presented in the month of July. The interim budget is also called a Vote on Account as the Constitution of India says that there can be no withdrawal of money from the consolidated funds of India barring under appropriation made by law and appropriation bill takes time to pass while the Government has around two months starting from 1st of April. There is no major difference in the content of the full budget and an interim budget. As of June 2020, Morarji Desai has presented 10 budgets (highest amongst all finance ministers of India) followed by P. Chidambaram who has presented 9 budgets, then Pranab Mukherjee who has presented 8 budgets, then Yashwant Sinha, Yashwantrao Chavan and C.D Deshmukh who have all presented 7 budgets each (Times, 2019). It is preceded by a halwa ceremony because of the Indian tradition of which states that one should start something important by eating something sweet. The budget briefcase was a tradition wherein the Finance Minister used to carry the budget document in a leather briefcase which was broken why the current Finance Minister Nirmala Sitharaman who carried a Bahi-Khata.

Additionally, the Railway Budget was presented separately by the Railway Minister up until 2016 (a 92-year-old practice), post which the Railway Budget was consolidated into the Union Budget. Since the budget has expenditure and revenues of the Government there is a component of surplus and deficit in the budgets presented. The budget of 1973 is often referred to as black budget due the budget deficit of ₹550 Crores which was presented by YB Chavan. India has always had a budget deficit except for 1951, presented by CD Deshmukh, which was the first ever budget to have a budget surplus of ₹71 Lakhs. The 2020 Union Budget is currently the longest ever budget in

the history of India which was presented for around 161 minutes. For the purpose of this project the Union Budget of 2019 has been taken into consideration which was presented on the 5th of July 2019.

RELATIONSHIP BETWEEN THE UNION BUDGET AND THE STOCK MARKETS

The following are some of the ways the Union Budget impacts the Stock Markets.

Increment in the Limit of Exemption for the Taxpayers and its Impact

The change in the income tax slabs in the Union Budget of a particular year has a heavy impact on the indices of the stock markets of that year. In the case of the Budget providing financial relief in the form of tax benefit/reductions the indices i.e. the NIFTY-50 and the SENSEX goes up. This is due to the positive sentiment that less tax would result in more savings and more savings in turn would result in the individual having more disposable income and which in turn would make lead them to investing into stock markets. The increase in investment always ends up with a bullish market.

Corporate Tax Changes and its Impact

This tax is meant to be paid by the companies falling under the ambit of revenue that has been stated under the Finance Rules and the Income Tax Act, 1961. Just like the Government changes the other taxation limits it also has a habit of changing the corporate tax rates with every Union

Budget announcements. Since the corporate tax rates directly influence a company's financials, it might result in an increase or decrease in the tax load/liability on the company. In the case of tax rate reduction, the company is left with a surplus profit which they can invest to grow and expand which in turn will increase the company's market value and thus their share price. This increase in share price would push up the index even if it is minute.

Stand on Long Term Capital Gains and its Effect on the Stock Market

With every Union Budget announcement, there is some or the other update in the long term capital gains (LTCG) on equities and more. For there are rumors about the increase in the amount of holding period of the shares so that they can qualify as an LTCG asset or removing LTCG completely. The tax liability of a person is known through their short term and long term investments. The taxation rates of LTCG is more than that of STCG, therefore removing the tax rates of LTCG would considerably reduce tax burden. This would in turn increase the returns of the investors and entice them to invest more leading to a stronger economy.

Taxation Policy on Buyback of Shares

Budget brings in a lot of changes that are new and recently the taxation on the buyback of shares was one of such things. This move increased the tax on buyback of shares to 20% which resulted in the investors receiving reduced payout than what was intended. This may make the investors hesitant when it comes to putting in their money in the market due to the decreasing of their net return because of the reduced tax liability.

Impact on the Stock Market and the Sector-wise Hit

The Union Budget announces the different policies pertaining to the different sectors of the Indian economy every year. The aforementioned sets of the novel policies have a strong impact be it positive or negative. If the said announcement is in the favor of the sector or the industry, then the impact would be extremely positive i.e. there would be a sudden growth and increase in the performance. This would reflect on the increased share prices of the companies of that respective sector. People would further start investing in them due to their lucrative returns. The opposite would happen if the policies announced are more on the stricter side making them a less lucrative option for investing.

OBJECTIVE OF THE PAPER

The following are the objectives of this academic project

- To conduct an event study
- Study the impact of Union Budget on the Stock Market specifically the National Stock Exchange using statistical tools by studying the impact on the constituent companies of the NIFTY-50 index.

SCOPE OF THE PAPER

The research paper aims to study the impact of the union budget pre 50 days and post 50 days and to check what kind of impact does it have on the Indian stock market specifically National Stock Exchange, India. The study considered 100 days of secondary data that has been divided into pre and post budget. There are further 200 days taken for a more precise calculation of the alpha (α) and beta (β) values. Alpha (α) is defined as the excess return on an investment relative to the return on a benchmark index whereas beta (β) is defined as the measure of relative volatility that measures the systematic risk of a security or a portfolio in comparison to the market as a whole. The study is an event study which basically means the study of the impact of any event on the various stocks in a stock market. Since the only market covered in this study is NSE and India's Union Budget announcement therefore it is only limited to the Indian subcontinent.

LITERATURE REVIEW

There have been numerous studies conducted with regard to what impacts the stock market and what are the repercussions of the impacts.

Shefali Sharma and Balwinder Singh in their paper titled **Determinants of Equity Share prices in the Indian Corporate Sector (2006)** investigated the impact on the Indian stock market in the post reform era of the calendar effect. The study reached a conclusion that over a period of six and a half years, starting from 1st January 1996 to 10th August 2002, there was some seasonality exhibited by the Indian Stock market in daily returns (Sharma & Singh, 2006).

Jayen B. Patel in his research titled **Calendar Effects in the Indian Stock Markets (2008)** concluded from their study that there are two very different and separate calendar effects in returns of the stock markets in India. A March-to-May effect in which the mean returns from the month of March to May are notably lesser than that of the other remaining nine months, and a November-December effect in which the mean returns from the months of November to December were significantly greater than that of the other remaining months (Patel, 2008).

Mihir Dash, Mohit Sabharwal and Anirban Dutta in their research paper titled **Seasonality and Market Crashes in Indian Stock Markets (2011)** concluded that month of the year effect (calendar effect) has a positive impact on the Indian stock market from the month of August, November and December whereas it was negative for the month of March. It also proposes that the impact of the seasonal effect reduces significantly in the occurrence of the market crash (Dash, Sabharwal, & Dutta, 2011).

A few studies have also been conducted to study the impact of budget announcements on the Indian stock market due to it being an important one such being that of **S.V.D.N. Rao's**, who in his paper titled **Impact of Macroeconomic Events on Stock Price Behavior (1997)** analyzed the stock market from the year 1991 to 1995 and found that the Union Budget had contributed to the volatility and unpredictability in the stock prices (Rao, 1997).

Susan Thomas and Ajay Shah in their paper titled **Stock Market Response to the Union Budget (2002)** have analyzed the impact of 26 Union Budgets between the period of April 1979 to June 2001 and have divided their analysis into pre-budget returns and post-budget returns. In some cases, the post-budget returns have been positive whereas in some cases the post-budget returns have been negative, therefore they report that there is no clear pattern on the movement postbudget (Thomas & Shah, 2002).

Divya Verma Gakhar, Neha Kushwaha and Vinita Ashok in their research paper titled **Impact of Union Budget on Indian Stock Market (2015)** have studied five Union Budgets from 2011 to 2015 to study the impact of the Union Budgets during this period. They have divided the analysis period into post 3 days (short term), 10 days (medium term) and 30 days (long term) of the budget and into pre 3 days, 10 days and 30 days of the budget. They have concluded that the budget does not have any significant impact on the average returns of the NSE whether we take into consideration pre or post budget period in short term, medium term or long term (Gakhar, Kushwaha, & Ashok, 2015).

RESEARCH OBJECTIVE

The objective of the research paper is to find whether the Union Budget has any significant impact on the Stock market i.e. the National Stock Exchange and specifically its NIFTY-50 Index through event study methodology.

RESEARCH METHODOLOGY

PROCEDURES

The data was collected for the all the individual NIFTY-50 constituent companies closing price from the NSE's official website. The collected data was fed into 50 excel sheets and then analyzed. The data collected for each company along with the NIFTY-50 index values for 301 days and the analysis done was for 300 days (as we lose one value while doing analysis). The data was divided into two parts, 50 days' (The data required for this study was for merely 50 days but for the calculation of alpha (α) and beta (β), a year's data was required for better accuracy and there are 250 working days in a calendar year) pre-budget data and 50 days' post budget data. The analysis of each company involved calculating the stock return, market return, normal return, abnormal return, t-statistics of abnormal return, cumulative abnormal return, t-statistics of cumulative abnormal return, alpha (α), beta (β), standard error and standard deviation. Then the abnormal returns of all the 50 constituent stocks were put together in a new excel sheet and their average abnormal return, cumulative average abnormal return, standard deviation and the t-statistics of the cumulative average abnormal return were calculated. The resultant t-statistics value then checked whether it's greater than or less than 1.96. If it was less than 1.96 then the impact of the Union Budget announcement was insignificant and if it's greater than 1.96 then the impact will be significant.

ANALYSIS

The analysis of data was done on Microsoft Excel 2016. The data of NIFTY-50 50 companies were downloaded from www.nseindia.com and www.moneycontrol.com and collated on the different excel sheets. The analysis and the output was completely quantitative. The analysis mainly comprised abnormal return and t-test analysis.

LIMITATIONS

The use of Tick by Tick data was difficult as it is too costly to procure from the www.nseindia.com website. Instead the authors considered the daily closing price data for the present study.

FINDINGS AND RECOMMENDATIONS

The study conducted on the 50 constituent stocks of the NIFTY-50 index concluded that there is no significant impact on the individual stocks due to the Union Budget announcement. This was concluded by running the aforementioned tests on each of the 50 constituent company's stocks. The results of the event study show that there is no impact of the event i.e. the Union Budget on the Stock Market because the t-statistic value is less than 1.96 making its impact insignificant.

CONCLUSION

From the tests conducted it can be seen that the t-statistic is less than 1.96, that is, it does not have a significant impact. Therefore, it can easily be concluded that events such as Union Budget announcement do not have any significant impact on the stock markets in the short run. But for a more conclusive result the time frame of the study needs to increase.

REFERENCES

- [1] <https://economictimes.indiatimes.com/bse-ltd/infocompanyhistory/companyid-2809.cms>
- [2] <https://economictimes.indiatimes.com/news/economy/policy/the-man-who-created-indias-first-everbudget/articleshow/69838774.cms?from=mdr>
- [3] https://shodhganga.inflibnet.ac.in/bitstream/10603/144397/6/06_history%20of%20stocks.pdf
- [4] <https://tradebrains.in/10-largest-stock-exchanges-in-the-world/>
- [5] <https://www.bloomberqint.com/bq-insight/union-budget-historical-timeline>
- [6] <https://www.bseindia.com/Sensex/IndexHighlight.html>
- [7] <https://www.deccanherald.com/business/budget-2020/no-timeline-to-remove-i-t-exemptionsfinance-minister-nirmala-sitharaman-805330.html>
- [8] <https://www.financialexpress.com/what-is/interim-budgetmeaning/1616079/#:~:text=An%20Interim%20Budget%20is%20a,the%20final%20budget%20is%20presented.>
- [9] <https://www.investopedia.com/>
- [10] <https://www.investopedia.com/terms/e/eventstudy.asp#:~:text=An%20event%20study%20is%20an,rea ct%20to%20a%20given%20event.>
- [11] <https://www.moneycontrol.com/>
- [12] <https://www.moneycontrol.com/news/business/economy/throwback-budget-1951-the-budget-surplus-2496527.html>
- [13] <https://www.mumbai.org.uk/bombay-stock-exchange.html>

- [14] https://www.nseindia.com/live_market/dynaContent/live_watch/equities_stock_watch.htm
- [15] <https://www.statista.com/statistics/265236/domestic-market-capitalization-in-the-asia-pacificregion/>
- [16] Bhatiya, U. (2020, October 13). 'Scam 1992: The Harshad Mehta Story' Review: Bulls on Parade. Retrieved January 02, 2021, from mint lounge: <https://lifestyle.livemint.com/how-tolounge/movies-tv/-scam-1992-the-harshad-mehta-story-review-bulls-on-parade-111602580073553.html>.
- [17] Carroll, J. (2020). *Thriving Communities*. Fortescue Metals Group Ltd.
- [18] Countinho, A. (2017, January 23). BSE: A Journey in Time. Mumbai, Mumbai, India: Business Standard.
- [19] Dash, M., Sabharwal, M., & Dutta, A. (2011). Seasonality and market Crashes in Indian Stock Markets. *Journal of Economic Literature*, 3 (1), 51–59.
- [20] Gakhar, D.D., Kushwaha, N., & Ashok, V. (2015). Impact of Union Budget On Indian Stock Market. *SCHOLEDGE International Journal of management & Development*, 2 (11), 258–274.
- [21] Patel, J.B. (2008). Calender Effects in The Indian Stock Market. *International Business & Economics Research Journal*, 7 (3), 61–69.
- [22] Rao, S.N. (1997). Impact of Macro Economic Events on Stock Price Behaviour. *Management and Accounting Research*, 08 (3), 122–140.
- [23] Sharma, S., & Singh, B. (2006). Determinants of Equity Share Peices in Indian Corporate Sector. *Jamsbedpur Research Review*, 3 (11), 22–28.
- [24] Simpson, S.D. (2021, Feb. 07). *Who Owns the Stock Exchange*. Retrieved Feb. 10, 2021, from investopedia: <https://www.investopedia.com/financial-edge/0311/who-owns-the-stockexchanges.aspx>
- [25] The Man Who Created India's First ever Budget. (2019, June 18). Mumbai, Mumbai, India: *The Economic Times*.
- [26] Thomas, S., & Shah, A. (2002, February). Stock Market Responce to Union Budget. *Economic and Political Weekly*, 455–458.
- [27] Times, T.E. (2019, January 14). Finance Ministers Who Shaped India's Economy. Mumbai, Mumbai, India.
- [28] Wikipedia. (n.d.). Nifty 50. Retrieved from Wikipedia the free Encylopedia.

Reviewing the Effect of Organisation Culture on the Employees Retention

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Abstract: The aim of this paper is to extensively review the literature for the effect of organisation culture on the employees of an organisation and their retention process. The first part of the paper traces the existing literature for the relationship of the concepts and tries to identify the gaps in the research done in the area. The later part of the paper discuss the future aspects in terms of understanding the relationship of culture and retention of the employees in the organisation and utilising it for longer terms beneficial policies development by the organisation by creating environment for the employees by staying in the organisation and cutting down the whole process of hiring and Training.

The paper is framed on the ground of the study related to employee's retention and its applicability in an organisation in relation to organisation culture. The organisation in today's scenario finds it hard to attract and retain people for a longer period. With all the issues with the upcoming generation related to loyalty and retainability. Studying employee retention along with theories like Attributional Complexity, attributional knowledge, nationalisation of job opportunities and others. These stand as two different side of the coin needs to go hand in hand.

This study is to understand and determine the factors of organisation culture, which leads to the employee retention in any organisation. In multicultural society, it is challenging the organisation to hold up the right employees and for doing so developing the right strategies will be required. The first and foremost important requirement for retention strategies will be the direct and indirect cost involved in the whole process.

Keywords: Retention, Organisation Culture, Organisation, Diversification

INTRODUCTION

To keep employees retained and to keep their satisfaction high, organisation need to implement each of the three employee retention concepts: respect, recognition, and rewards. Understanding each employee is different and retaining multicultural group candidates require a multistage and multifactor setup for a good employee base.

Also supported by Ramlall (2003) who stressed the importance of recognizing the individual requirements of an employee in an organization as it will encourage commitment and provide a suitable work environment.

The objective of this paper is to understand the relationship between organisation culture and employee retention and the unexplored terms of both for the performance of organisation and employees. We proceeded with the existing literature as a base to start and tries to understand weather the two concepts has already been studied in relation to each other and how it will be affecting the employees and organisation in terms of staying and performing.

ORGANISATION CULTURE

The study of organisation culture has been studied for more than a decade. Dr. Elliott Jaques first used the term in his book in 1951. Culture in organisation derives with different cultures compared with one another along with subculture too as discussed by Schein (1992), Deal and Kennedy (2000), and Kotter (1992). Organisation need to identify the factors of organisational culture effecting the employee's decisions to and potential reasons for choosing to leave. All these stand for developing strategies for promoting employee retention.

Employee retention strategies a key part of an organization's vision, mission, values, and policies. Dibble (1999) shared that employee retention starts with orientation. Baldoni's (2013) helps us to understand that employee engagement goes beyond productivity: it reduces employee absenteeism, safety incidents, and quality concerns. Powell's (2012) research that most employers and business leaders often fail to understand why their employees leave. The importance of employee's retention for every organisation, no matter of its size is the development of the culture and making sure, the employees are considerate as assets and keeping them longer is for the benefit of both. As SHRM's (2004) employee survey maximum employees quit their job due to reasons that include lack of opportunities for professional development, insufficient compensation, deprived work/life balance, job stress, and unfair treatment. This would be even more evident for women and minorities within a less diverse workplace. Kopelman and colleagues (1990) suggested that cultural values will ultimately influence organisational effectiveness by enhancing the quality of outputs or reducing labour costs.

EMPLOYEE RETENTION

Described as the process of encouraging employees to stay for a long period or till the project completion is termed as retention." Hom and Griffeth (1995). Retention is been evolved and understood since the multinational organisation existed. As the multicultural group coexisted it will be valuable to understand, why the employees will be joining, staying, or choosing to leave. Wells & Thelen (2002) stated in their study that organizations which obligate generous human resource policies, ought to a very good chance to satisfy and retain employees by providing them an appropriate level of privacy and sound control on work environment which enhances the motivation levels to commit with the organization for the long term. Retaining people takes lot

of theory understanding and utilising it for doing the best for both employers and employees. (Hale, 1998) states that employers cited recruitment costs of 50 to 60% of an employee's first year's salary and up to 100% specialized, high-skill positions. In another study, Fitz-enz (1997) indicated that when direct and indirect costs are combined, the total turnover cost of an exempt employee is a minimum of one year's pay and benefits, or a maximum of two years' pay and benefits.

Employee retention is widely studied for the impact created due to employee's voluntary and involuntary movement in organisation. Few of them as captured by Piyali Ghosh *et al* (2012) is been refereed for in the table below.

Table 1: Study of Employee Retention with Respect to Other Variables

Sl No	Variable	Author & Year	Factors of Employee Retention
1.	Commitment	Meyer <i>et al.</i> (2002)	Authors found a negative link between employee commitment and absenteeism, quitting, stress, work family conflict and intention to leave the organization
2	Organizational culture	Kerr and Slocum (1987)	Found a relationship between variation in employee retention rate and organizational cultural values
		Sheridan (1992)	Perceptions about OC affect employee turnover
3	Work environment	Labov (1997)	Organizations with strong communication systems enjoy lower turnover of staff
		Zuber (2001)	Employees are more likely to stay when there is a predictable work environment and vice versa
4	Job satisfaction	Lee (2000)	Need for challenge and achievements, and the components of job satisfaction play a significant role in influencing turnover intentions among IT professionals
		Ghiselli <i>et al.</i> (2001, p. 36)	The authors examined the role that job satisfaction and life satisfaction have on turnover decisions, and found that “managers who were more satisfied with the intrinsic components of their jobs, more satisfied with their life and are older were less likely to leave their position imminently”
		Beecham <i>et al.</i> (2008)	The most commonly cited motivator of not quitting job is the job itself, whether it is routine, creative or useful

STUDIES OF EMPLOYEES RETENTION AND ORGANISATION CULTURE

Few studies involve both employees retention and organisation culture as components. Employee retention strategies, a key part of an organization's vision, mission, values, and policies. Dibble (1999) shared that employee retention starts with orientation. These components are the factors for the organisation culture. Employee turnover is expensive to the organizations bottom-line. Lucas' (2013) report that employers do not understand the expense of high employee turnover. This leads to loss of revenue and loosing employees at the same time. These are reasons for failure of organisation without understanding the employees as being the biggest assets. Harisis and Brian (1993) studies how prejudice and cultural misunderstanding lead to an increased

employee turnover. Even concept of person organisation fit is considered for the reason of better fitment and absorption of employees in any organisation. As its been understood the impact of culture plays a role in retaining employees. Focus should be played on to define a study with the defined components of each for better results.

The organisation culture plays an important role in retaining the employees in an organisation. The work of Sheridan 1992 revolve around the same. Kerr and Slocum(1987) and Kopelman and colleagues(1990) argued that the variation in employee retention across organisations may be related to organisational culture values. They also mentioned that organisational culture values may moderate differences in the retention rated of stronger and weaker performers. They also mentioned that the difference in culture and its approach towards factors such as values of teamwork, security, respect for individual members, personal initiatives. So the major factors of organisational culture used in various questionnaire for evaluation purposes. Here the two concepts has been discussed and understand for the effect of these on one another.

Kerr and Slocum (1987) and Kopelman and colleagues (1990) argued that the variation in employee retention across organisations may be related to organisational culture values. Since the beginning of the new millennium, every Organisation lamented the dearth of talent and its shortening Life span in organisations (Bhatia, 2011, p. 305). It can be always recruitment if retention is not well taken care of by the organisation. The approach of Employee Retention has developed gradually and has undergone focused attention in various periods (J. Leslie Mekewon, Bhatia, 2011, p. 300). As mentioned by Leslie Mekewon that no single retention plan fits commonly to every organisation. Based on this understanding organisation should develop a framework for employees retention in which dealing with the diverse population can be handled well.

GAP IN THE RESEARCH

The study involving the variables organisation culture and employee retention remain few and the existing ones not covering the complete factors of culture for its accurate effect on retention of employees in an organisation. Organisation understanding regarding the need of creating an retention framework fitting the varied background and diversified workforce for sustainability and productivity. The dimensions for organisational culture to be considered be there as work values and artifacts. Current theories of cultural values (e.g. Inglehart, 1977, 1990; Triandis,1990) address limited aspects of culture (e.g. materialism– postmaterialism; individualism–collectivism) rather than seeking to capture a full range of potentially relevant value dimensions. The companies should recruit those with values matching the organization's values, since such individuals adjust to organizational values quickly, feels satisfied, and stay

longer as explained (Cable, Aiman-Smith, Mulvey, & Edwards, 2000; Chatman, 1991). Culture is build around work and work has its value system which should be absorbed by the employees for the fitment in the organisation and for getting retained in the organisation.

Proposed items for studying the two dimensions: The culture dimensions should include the culture parameters in terms of values and artifacts. In addition, along with employee retention with the items of both intention of staying and leaving in single frame. Since the culture in organisation is totally covered in Public domain the value system should be limited to work value systems and artifacts along with the employee retention items of intention to stay and intention to leave. Explained in the following table:

Table 2

Variables	Items
Instrumental Values	Pay, benefits, security, convenient hour, work condition
Cognitive Values	Advancement, feedback, status, achievement, job interest, meaningful work, personal growth, use of ability, Responsibility, contribution to society, independence, company, work influence, organisation influence
Affective Values	Recognition, Co-workers, Esteem, Interaction, Supervisor
Artifacts	
Employee Retention	Intention to stay Intention to Leave

CONCLUSION & OBSERVATION

By reviewing the literature the importance of variable organisation culture and employees retention has been determined. The impact it creates on the other variables like organisation commitment, organisation structure, employees engagement and others has been analysed with ample existing studies and quantitatively analysed model. Understanding the importance of these variables and the differences it makes in organisation setup is important. A very limited work has been done by concentrating on the relationship of organisation culture and employees retention. A scope of developing a new model for evaluating the impact of organisation culture on employee retention to be focused. The impact of organisation culture on employee's retention is for the betterment of both the employees and employer. The model will be for organisation with employee as an asset and cost reduction with much effective human resource management. The study for understanding both the factors with clear items influencing each other and making best out of each other need to be precisely designed and measured. The items for consideration has been identified and for evaluation and it required to be quantitatively analysis for the same.

REFERENCES

- [1] Allen, D.G. (2008), Retaining Talent: A Guide to Analyzing and Managing Employee Turnover, SHRM Foundation, Alexandria, VA
- [2] Ans De Vos and Annelies Meganck, “What HR managers do versus what employee’s value”: *Personnel Review* Vol. 38 No. 1, 2009 pp. 45–60.
- [3] Brown, A. (1995), *Organizational Culture*, Pitman, London.
- [4] Cardy, R.L. and Lengnick-Hall, M.L (2011) Will they stay or will they go? Exploring a customer-oriented approach to employee retention. *Journal of Business & Psychology*, 6(2), 213–217.
- [5] Dr. Mita Mehta and *et al*, Review Paper – Study on Employee Retention and Commitment, *International Journal of Advance Research in Computer Science and Management Studies*, Volume 2, Issue 2, February 2014.
- [6] Dibble, S. (1999). *Keeping Your Valuable Employees: Retention Strategies For Your Organization’s Most Important Resource*. New York: Wiley.
- [7] Michael Hay,” Strategies for survival in war of talent”: *Career Development International* 7/1 (2002).
- [8] Piyali Ghosh and Rachita Satyawadi,” Who stays with you? Factors predicting employees’ intention to stay”: *International Journal of Organizational Analysis* Vol. 21 No. 3, 2013 pp. 288–312.
- [9] Jyotsna Bhatnagar. (2008), “Keeping employees in Indian call centres”. *y*, Vol. 1 6 NO. 3 2008.
- [10] Harisis, D.S., & Kleiner, B.H. (1993). Managing and valuing diversity in the workplace. *Equal Opportunities International*, 12(4), 6.
- [11] Herman, R.E. (2005). HR managers as employee-retention specialists. *Employment Relations Today*, 32(2), 1–7.
- [12] Hofstede, G. (1991). *Cultures and Organizations*. New York: McGraw-Hill.
- [13] Ramlall, S. (2004). A review of employee motivation theories and their implications for employee retention within organizations. *Journal of American Academy of Business*, 9, 5263.
- [14] Ramlall S, “Managing employee retention as a strategy for increasing organisational competitiveness”. *App. H.R.M Res.* Vol.8, No.2, 2003
- [15] Schein E.H. (2004). *Organizational Culture and Leadership*. An Francisco: Jossey-Bass.
- [16] Schneider, B. (1990), *Organizational Climate and Culture*, Jossey-Bass, San Francisco, CA.
- [17] Wasti, A.S. (2003). Organisational commitment, turnover intentions, and the influence of cultural values. *Journal of Occupational and Organisational Psychology*, 76,303–321. <http://dx.doi.org/10.1348/096317903769647193>.

A Conceptual Framework of Innovation & Entrepreneurship Education in India with Model Adopted from *Maritz and Brown* (2013)

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Abstract:

Purpose: Innovation & Entrepreneurship become the need of the hour in progressing country like India. The higher education system is valued as contributing factor for the development of Innovation & Entrepreneurship and the literature is not adequate to assess the components of Entrepreneurship developed through our education system. This paper embarked on the journey to conceptualise the value of the Innovation & Entrepreneurship in higher education in the context of assessment & evaluation.

Design/methodology/approach: This paper assess the existing literature review in the domain of Innovation & Entrepreneurship and adopts the conceptual framework developed by Maritz and Brown towards the context in India.

Findings: The paper finds the adoptability of the conceptual framework developed by Maritz and Brown in the context of India's higher education scenario in the domain of Entrepreneurship education.

Research limitations/implications: The conceptual framework should be validated with proper empirical evidence and its suitability in the context of Entrepreneurship Higher Education of India.

Practical implications: The concepts framed in the model pertaining to objectives, assessment, pedagogy is try to give comprehensive assessment of entrepreneurship teachings in higher education. In this method the model describes the relationships exists between different components of higher education methodology.

Originality/value: The paper finds that Innovation & Entrepreneurship teachings in higher education to be valued based on the context it operates.

Keywords: Innovation, Entrepreneurship, Higher Education

JEL Classification Code: O31, M13, I23

INTRODUCTION

Innovation & Entrepreneurship is gaining a large momentum in today's scenario. The function of Business Incubators in Colleges & Industries have contributed more to the development of Start-ups. India is progressing well in the area of Manufacturing and had its strategy to go for local production instead of sourcing from neighbouring countries. The young age population are more energetic and want to chase their dream instead of taking conventional route of working for companies. The higher education in India have contributed more for the development of first generation Entrepreneurs though it's statistically not very significant. Entrepreneurship as an education & training given great impetus towards the growth of the business activities. The training from various higher educational institutes have paved a good way to think about choosing starting an own business is also a viable option for the college graduates. On the other hand development of Business incubators setup in colleges and Top companies have made the students and employees to think about starting their career in Entrepreneurship. These incubation centres have given a good drift towards Innovation. The training program offered in these specialized zones had made the students to get virtual experience in Entrepreneurship. The confident of the trusting the own innovation happened through these types of business incubation those who are all working in sector specific thrust areas. The population in our country is very significant and to develop the entrepreneurial ecosystem requires much more push from the interested stakeholders. The past activities of training and education in Entrepreneurship and Business Incubation set-up did provided good way for the budding new entrepreneurs but the result is not very significant due to the high population. Higher Education is a proven method in developing entrepreneurial culture but it need to be assessed and empirically validated. The framework adopted in this paper will be comprehensive in nature and it will give good assessment towards success of entrepreneurship through education.

CONTEXT

The context is very important to understand the ground reality of the success of Entrepreneurship education. It is also a localising factor to learn about the real outcome of the assessment. India as country need to be studied along with its ethnic diversity, culture, educational reforms. The career as entrepreneurship is another context need to be studied and verified. Learning about Funding resources and risk appetite will give better understanding in the context variable. The review of literature in entrepreneurship education for context advocates such inclusion (Edwards and Muir, 2012; Harte and Stewart, 2012; Balan and Metcalfe, 2012; Matlay, 2005). In the literature review most of the scholars recorded the entrepreneurship education as culture of enterprise (Sexton and Landstorm, 2000; Hisrich and Peters 2002). The innovation quotient of Entrepreneurship has also given same attribution like cultural aspects (Jack and Anderson, 1999). Some of the Indian scholars have tried to give comprehensive approach towards the understanding of Entrepreneurship Tripathi (1985).

OUTCOME

In learning about outcome of the program the individual personality (David *et al* (2002); Kaneyan *et al* (2004);) decides the major success factors and its justifiable to understand the individual personality attributes. The business intelligence is a variable to be noted when there is a learning about Entrepreneurship. Individual personality characters like courage and risk taking are the very important components to decide the outcome of the education about entrepreneurship in the higher educational institutions (O'Connor, 2012). The entrepreneur should be very practical in its approach and the better attitudes and knowledge provides a good way of success. Another important variable to be noted is venture development and which is an important outcome of any Entrepreneurship education.

OBJECTIVES

The objectives in this framework is broad and covers all aspects of the required assessment. It has variables like pedagogical, social economic – this will portray the method of approach towards the assessment in the education. The second variable in this objective is “Education on India’s history of Entrepreneurship” which has important connote to understand the India’s rich history of trading and entrepreneurship activities across the globe. This section will help to assess the concept of “Think globally and act locally” Garavan and O’Cinneide (1994a, b). The component of new age skill requirements will add value in understanding the updated syllabus in our education system. Business scenario is always changing and it’s important to keep pace with the changing global environment and the variable like this will help to assess the skill development aspects in the Entrepreneurship education. Interpersonal skills are the required component in this method of education and it allows the learners to assess their own strength and weakness and will channelize their energy towards development of their own venture Linan’s (2004). In past decades the entrepreneur doesn’t require any formal education but in today’s global environment it’s very important to learn new knowledge and business details. The economics of global and India is changing continuously and it’s very important to learn the economics part of the Entrepreneurship. The attributes will help the entrepreneur to shift from one stage to another and it’s related to dream, achievement, self-confidence, overcome failures, consistency in task. These components will bring awareness about one self and the early entrepreneur will learn to do self-introspection and they will take better decisions about their venture.

ASSESSMENT

In the view of (Henry *et al.*) Alberti *et al.* (2004, p.20) states that the assessment was not given much importance in the education of Entrepreneurship. In the context of India it is much more valid to do the assessment from the point of growth of number of start-ups, employment given, large scale development, skills development, notified new age businesses, attitudes and behaviour of new entrepreneurs, availability of finances for the development. The important learning is in the factor of effectiveness of entrepreneurship through behavioural objectives developed in the training programs.

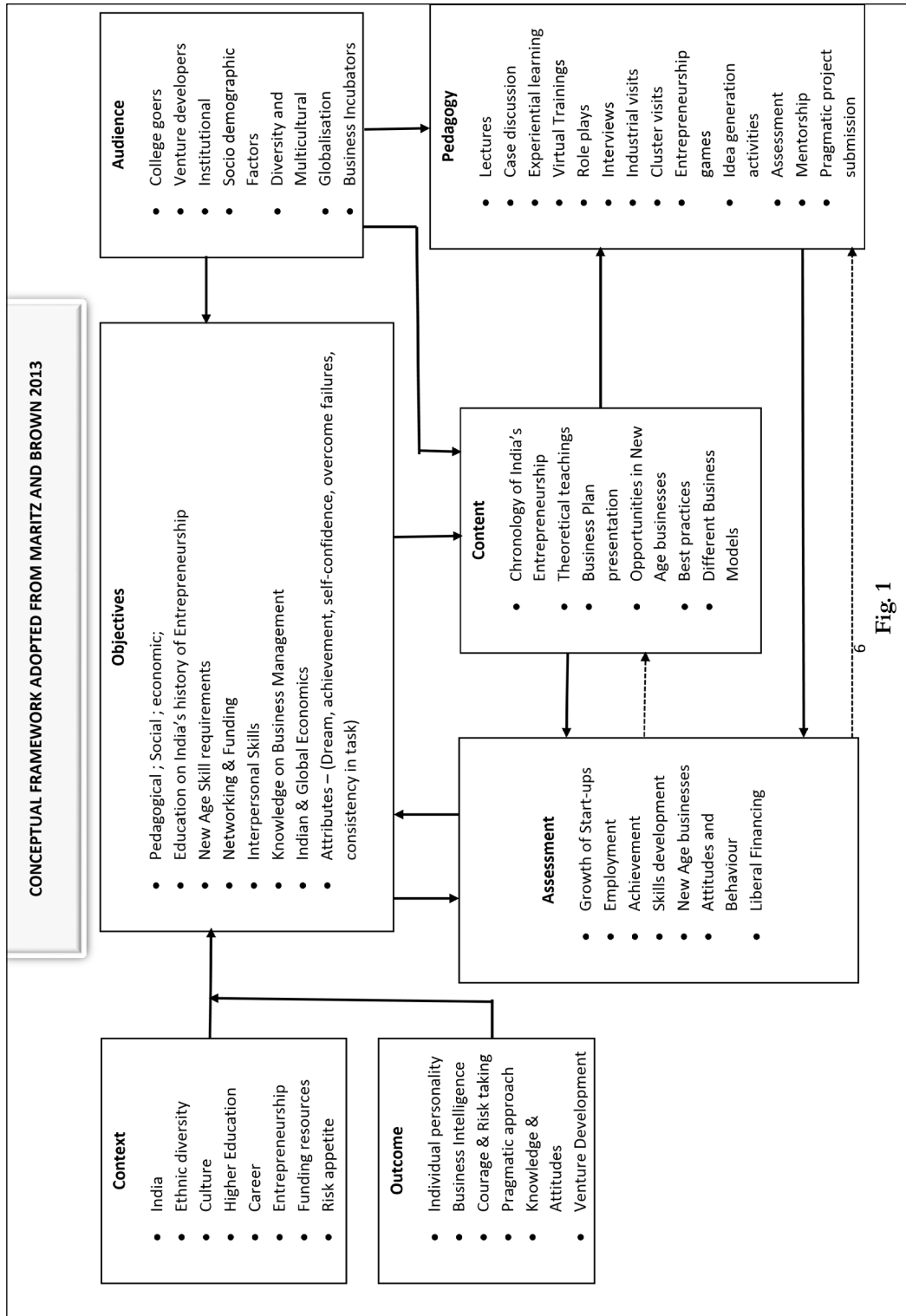


Fig. 1

CONTENT

The warning of Bygrave (1993) is that if Entrepreneurship education is completely theoretical teaching or completely practical oriented, then it will not fetch desired result. There should be a balance exists in the teachings of Entrepreneurship. The purpose of the learning of this subject should be made in the content. In India's scenario it is important to learn the past history of business management for the students, because it will give a good perspective towards learning of doing ethical business. In the view of Robinson and Haynes (1991) it is observed there is a lack of theoretical concepts in the learning of Entrepreneurship and it is argued that only through proper theory, the practical should be built. Gibb (1987) stressed the importance of class room teachings and its significance in the real world. Theoretical teachings in the content is very important to learn the fundamentals and it should be substantiated with proper practical sessions. Business plan presentation is a key area of the content variables. If proper plan is made then the 50% success of the business is ensured. The connection between content and pedagogy is established in this model. Learning about new age businesses is very important in this globalised world and this lead to learn about new innovations and its subsequent businesses of the future. One of the important task in content variables derivation is to learn about "best practices" in the business. Learning about the tested business practices will give a good learning towards decision making ability. Business are different across the nation and globe. One model doesn't suit other and it is important to learn about different business models exists and its pros and cons.

PEDAGOGY

Pedagogy – The principles and methods of instruction is very important in Innovation & Entrepreneurship teachings. Matlay (2008) highlighted the importance of pedagogical methods and its positive outcomes. On the other hand, Taatila (2010), Fayolle (2010) observed the importance of traditional and non – traditional approaches towards teachings. The disadvantages of traditional methods in teaching leads to practical and creative process of entrepreneurship teaching through "non-traditional". The pedagogy involves lectures, case discussion, Experiential learning, virtual trainings, Role plays, Interviews, Industrial visits, Cluster visits, Entrepreneurship games, Idea generation activities, assessment, mentorship, pragmatic project submission and the variables identified are not comprehensive and there is always a scope of improvement exists in this listed variables. Oswa (2007) explained the importance of case discussion in business classes. This will give a virtual experience in the mind-set of the students and the students are able to take better decisions. It will also give learning experience of different businesses and it lead to the variable called experiential learning, which is gaining momentum in class room teachings. The concept of experiential learning gives more value to the teaching environment and it will help the students to imagine better about their ideas. In today's scenario, the industry lacks new ideas to solve the

traditional problems and it's important to do brainstorm about idea generation and through proper mentoring activity, it will be deployed into the real time scenario. The project is another form of business plan which had details about the new business the candidate want to start and this will give a good road map to start and to progress. Pittaway and Cope (2007) did stressed the importance of entrepreneurial learning and opined that the objective is to help participants cope with uncertainty and ambiguity, they recommend project-based learning to learn how to deal with problems in a "real-world".

AUDIENCE

The audience are the one going to get impacted or changed by this entrepreneurship courses and the target group of peoples like college goers & venture developers. Other than these target audiences there are other factors which will influence the section of this institutions, socio demographic factors, diversity and multicultural, globalisation, business incubators. The classification of students can happened on socio-demographic factors like age, gender, stages of venture (idea stage, start-up). Fayolle and Gailly (2008) noted that audience of the program is very important and they influence the outcome of the teachings and trainings. The students group also be heterogeneity in nature due to which many ideas will follow and new business venture will takes shape out of the sessions. Penaluna *et al.*, (2012) advocates the heterogeneity factors in the audience group. Chen *et al* (1998) advocated that more choice to be given for the students from other less popularize academic domains like Entrepreneurship. It is very well noted that students want to score marks in the Innovation & Entrepreneurship subject, rather than starting the new venture and here the business incubators plays a vital role in converting the student ideas into a venture. They provide space and mentorship and make the students accessible to various funding options, so that students will get real feel of starting their venture and started pursuing their dreams. Institutions on the other hand influences the audience category and they decides the nature of the group like homogeneous or heterogeneous. The institutions provide a platform for the audience to exchange their ideas and to collaborate. Globalisation is one of the key factor and the new normal is also another one factor to be considered while finalising the audience variable. The mix of people from different cultural values and different geographic locations will prove a good platform in exchanging their ideas. These type of heterogeneous group determines good outcome and learning will be more substantial rather than on theoretical.

CONCLUSION

The framework gives a comprehensive view to assess the methodology adopted in the Entrepreneurship educations and its success factors. This will throw more light on valuation of Education in the perspective of Innovation & Entrepreneurship. The components identified will have intertwined relationship with one another and one

variable contributes to the growth of another variable. The knowledge mentioned in Alberti *et al.* (2004) is the indicative factor of context and deliverables of entrepreneurship programs. The components expanded in this framework will give better picture about the valuation of Entrepreneurship Education in Higher educational institutions. The objectives has right kind of pathways and it is met with proper content and assessment. The components inside the box of objectives will make us to understand the whole function of Entrepreneurship in the context of new age era. The assessment is framed with variables of outcome based instead of theoretical based and this will provide a right guidance on the assessment of the continuing Entrepreneurship Education in India's scenario. Pedagogy is another point which gives the picture about new methodologies adopted in teachings. The proposed framework should be empirically validated with proper survey. The framework adopted here in the context of our country has valid variables and this model provides good approach towards learning the outcome & practices of Entrepreneurship Education. It will give overall dimension about different stakeholders involved in this value chain. The nature of this framework did considered all factors in the ecosystem of Entrepreneurial education and if empirically proven, this will be comprehensive model to assess the success of education and training towards Innovation & Entrepreneurship development. However validating this concept is a long way to go and this conceptual framework can be enhanced or reordered based on the empirical evidences.

REFERENCES

- [1] Brockhaus R.H. *et al.* (edt.) (2001). *Entrepreneurship Education: A Global View*, Ashgate.
- [2] Hisrich R. D., Peters M. P. (2002). *Entrepreneurship*, Tata McGraw – Hill Edition.
- [3] Jack and Anderson, 1999. Entrepreneurship Education within the Enterprise Culture: Producing Reflective Practitioners; *International Journal of Entrepreneurial Behaviour and Research*. pp. 110 to 125: University Press.
- [4] Krisner, I. (1973). *Competition and Entrepreneurship*. Chicago, University of Chicago.
- [5] Krisner, I. (1982). The Theory of Entrepreneurship in Economic Growth. In C. Kent, D. Sexton and K. Vesper (edt.) *Encyclopedia of Entrepreneurship*. Englewood Cliffs, Prentice–Hall, 272 –6.
- [6] Saini J. S., Gurjar B. R. (edt.) (2001). *Entrepreneurship and Education: Challenges & Strategies*, Rawat.
- [7] Swedberg, R. (edt.) (2000). *Entrepreneurship: The Social Science View*, Oxford.
- [8] Sexton D. L., Landstrom H. (edt.) (2000). *Handbook of Entrepreneurship*. Blackwell.
- [9] Tripathi, D. (1985) an Integrated View of Entrepreneurship, *Economic and Political Weekly*, Volume XX no. 48, November.
- [10] Adam, S. and Nel, D. (2009), “Blended and online learning: student perceptions and performance”, *Interactive Technology and Smart Education*, Vol. 6 No. 3, pp. 140 –55.
- [11] Ahiarah, S. (1989), “Strategic management and entrepreneurship courses at the undergraduate level: can one inform the other?”, *Proceedings of the 1989 Small Business Institute Director's Association National Conference*, Arlington, VA, pp. 60 –6.

- [12] Alberti, F., Sciascia, S. and Poli, A. (2004), "Entrepreneurship education: notes on an ongoing debate", paper presented at Int Ent 2004, *Internationalizing Entrepreneurship Education and Training*, University of Napoli Federico II, Napoli, 4 –7 July.
- [13] Audet, J. (2000), "Evaluation of two approaches to entrepreneurship education using an intention – based model of venture creation", *Academy of Entrepreneurship Journal*, Vol. 6 No. 11, pp. 57–63.
- [14] Balan, P. and Metcalfe, M. (2012), "Identifying teaching methods that engage entrepreneurship students", *Education & Training*, Vol. 54 No. 5, pp. 368 –84.
- [15] Bartik, T.J. (1994), "Better evaluation is needed for economic development programs to thrive", *Economic Development Quarterly*, Vol. 4 No. 4, pp. 361 –70.
- [16] Be´chard, J.P. and Gre´goire, D. (2005), "Archetypes of pedagogical innovation for entrepreneurship education: model and illustrations", in Fayolle, A. (Ed.), *Handbook of Research in Entrepreneurship Education*, Vol. 1, Edward Elgar Publishing, Aldershot, pp. 21 –34.
- [17] Brand, M., Wakkee, I. and van der Veen, M. (2007), "Teaching entrepreneurship to non –business students: insights from two Dutch universities", in Fayolle, A. (Ed.), *Handbook of Research in Entrepreneurship Education: Contextual Perspectives*, Vol. 2, Edward Elgar, London, pp. 52 –83.
- [18] Bygrave, W.D. (1993), "Theory building in the entrepreneurship paradigm", *Journal of Business Venturing*, Vol. 8 No. 3, pp. 255 –80.
- [19] Byrne, J. (2010), "Corporate entrepreneurship training: a routine enquiry", in Fayolle, A. (Ed.), *Handbook of Research in Entrepreneurship Education*, Volume 3: International Perspectives, Edward Elgar, Northampton, MA, pp. 297 –312.
- [20] Chen, C.C., Greene, P.G. and Crick, A. (1998), "Does entrepreneurial selfefficacy distinguish entrepreneurs from managers?", *Journal of Business Venturing*, Vol. 13 No. 4, pp. 295 –316.
- [21] Cheng, M.Y., Chan, W.S. and Mahmood, A. (2009), "The effectiveness of entrepreneurship education in Malaysia", *Education & Training*, Vol. 51 No. 7, pp. 555 –66.
- [22] Cornwall, J.R. and Dennis, W.J. (2012), "Peeling the onion: public policy in entrepreneurship education", *Journal of Entrepreneurship and Public Policy*, Vol. 1, pp. 12 –21.
- [23] Coron, C. (2010), "Entrepreneurs' education and training environment: a multicultural perspective", in Fayolle, A. (Ed.), *Handbook of Research in Entrepreneurship Education*, Volume 3: International Perspectives, Edward Elgar, Northampton, MA, pp. 122 –51.
- [24] Curran, J. (2000), "What is small business policy in the UK for? Evaluation and assessing small business policies", *International Small Business Journal*, Vol. 18 No. 3, pp. 36 –50.
- [25] Dickson, P.H., Solomon, G.T. and Weaver, K.M. (2008), "Entrepreneurial selection and success: does education matter", *Journal of Small Business and Enterprise Development*, Vol. 15 No. 15, pp. 239 –58.
- [26] Edwards, L. and Muir, E.J. (2012), "Evaluating enterprise education: why do it?", *Education & Training*, Vol. 54 No. 4, pp. 278 –90.
- [27] Falka"ng, J. and Alberti, F. (2000), "The assessment of entrepreneurship education", *Industry and Higher Education*, Vol. 14 No. 2, pp. 101 –8.
- [28] Fayolle, A. (2008), "Entrepreneurship education at a crossroads: towards a more mature teaching field", *Journal of Enterprising Culture*, Vol. 16 No. 4, pp. 325 –37.

- [29] Fayolle, A. (2010), Handbook of Research in Entrepreneurship Education, Volume 3: *International Perspectives*, Edward Elgar, Northampton, MA.
- [30] Fayolle, A. and Gailly, B. (2008), “Teaching models and learning processes in entrepreneurship education”, *Journal of European Industrial Training*, Vol. 32 No. 7, pp. 569 –93.
- [31] Fayolle, A., Gailly, B. and Lassas –Clerc, N. (2006), “Assessing the impact of entrepreneurship education programs: a new methodology”, *Journal of European Industrial Training*, Vol. 30 No. 9, pp. 701 –20.
- [32] Fiet, J.O. (2000a), “The theoretical side of teaching entrepreneurship”, *Journal of Business Venturing*, Vol. 16 No. 1, pp. 1 –24.
- [33] Fiet, J.O. (2000b), “The pedagogical side of teaching entrepreneurship”, *Journal of Business Venturing*, Vol. 16 No. 2, pp. 101 –17.
- [34] McGee, J., Peterson, M., Mueller, S. and Sequeira, J. (2009), “Entrepreneurial self –efficacy: refining the measure”, *Entrepreneurship: Theory & Practice*, Vol. 33 No. 4, pp. 965 –88.
- [35] Garavan, T.N. and O’Cinneide, B. (1994a), “Entrepreneurship education and training programs: a review and evaluation part 1”, *Journal of European Industrial Training*, Vol. 18 No. 8, pp. 3 –12.
- [36] Garavan, T.N. and O’Cinneide, B. (1994b), “Entrepreneurship education and training programs: a review and evaluation part 2”, *Journal of European Industrial Training*, Vol. 18 No. 11, pp. 13 –21.
- [37] Gibb, A. (1987), “Enterprise culture: its meaning and implications for education and training”, *Journal of European Industrial Training*, Vol. 11 No. 2, pp. 3 –38.
- [38] Gibb, A. (1997), “Small firms training and competitiveness. Building upon the small business as a learning organisation”, *International Small Business Journal*, Vol. 15 No. 3, pp. 13 –29.
- [39] Gibb, A. (1999), “Can we build effective entrepreneurship through management development?”, *Journal of General Management*, Vol. 24 No. 4, pp. 1 –21.

Analyzing the Problems Faced by the Indian SMEs in the Adoption Process of Big Data in their Systems

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Abstract: Big Data describes the large amount of data that the organizations deal with in their day to day operations. SMEs play as a backbone to the Indian economy and other developing countries. But the adoption and installation of big data require a lot of effort from the SME's sides. The objective of this paper is to identify the problems faced by the Indian SMEs in the adoption of big data in their systems. For this, a literature review is conducted to identify the various problems faced by SMEs in the adoption process. Twelve problems grouped under four categories are identified. Problems mainly categorized under technical barriers, economic barriers, human barriers, and organizational barriers. A questionnaire is prepared for surveybased research. The target populations are the employees working in the SMEs. Data collected are analyzed using factor analysis techniques. The result grouped all the twelve problems into four constructs.

Keywords: Big Data; India SMEs; Problems; Factor Analysis Technique; Questionnaire.

INTRODUCTION

In recent years, the research communities, businesses, and even governments have indicated an expanding interest in the capability of big data (BD) (Jin *et al.*, 2015). The fast improvement from data and correspondence advancements, which includes web-based applications, distributed computing, electronic commerce, and different advances, has prompted the development of BD (Wamba *et al.*, 2015). Also, because of Industry 4.0, and its expanding number of organizations, areas, and nations perceive this significance of BD. Around the world, the quantity of firms putting resources into BD and man-made consciousness has expanded from twenty seven percent in 2018 to thirty four percent in 2019, the research on BD was found more than US\$ 180 billion. A BD investigation area has a wide scope for all areas, particularly the production network (Robmann *et al.*, 2018).

The expected advantages of the BD can be important wellsprings of the improved capacities and its competitive advantages (Kubina *et al.*, 2015). BD researches has

become another approach in the improvement of business and accomplish the competitive advantages (Gunasekaran *et al.*, 2017). Notwithstanding, the quantity of hindrances to BD is critical, which makes it loaded with numerous difficulties, particularly for creating economies. This examination centers on BD obstructions with regards to creating economies. All the more explicitly, two examination holes are tended to: first, concentrates on BD are restricted, and the majority of them are applied (Watson, 2019). Likewise, the requirement for observational examinations is basic and all around perceived in the connected writing (Raguseo, 2018).

Small and Medium Enterprises (SMEs) have a significant part in the Indian manufacturing area and experience become the train of financial improvement in India. Today, SME organizations involve a place of vital significance in the Indian economic structure because of their critical commitment as far as yield, fares, and work. Since BD is problematic, complex, and has a wide extent of utilization, it is normal that BD will face different kinds of boundaries.

LITERATURE REVIEW

BIG DATA

BD is another innovation that has immediately scattered among professionals and scholastics from different businesses and the scholarly community (Bhadani and Jothimani, 2016). It has a wide scope of utilizations and rises up out of different wellsprings of information. In this manner, it is justifiable to discover a few perspectives and understandings of the meaning of BD, which makes it hard to set a widespread definition (Ogrean, 2018). Five qualities to the 3Vs model: verblity, verbosity, flexibility, consistency, and permeability (Mallah, 2019). At first, the thinking was that the volume of data had developed so hugely that the amount being analyzed no longer goes into the memory that PCs use for handling, so designs expected to patch up the devices they utilized for dismembering it all. That is the start of crude preparing advancements like Google's Map and its open-source same, Hadoop, which showed up out of Yahoo. The audit of definition, order, and innovative difficulties with respect to BD you can discover in crafted by Tabakow *et al.*, (2014) named "BD – definitions, difficulties, and IT advancements". BD refers to information that is too enormous to even think about fitting on a solitary host, too unstructured to even consider fitting into a line and-segment data set, or too constantly streaming to meet in a static information stockroom. The fact of the matter isn't to be amazed by the volume of data, yet rather to break down it – to change over it into experiences, innovations, and business esteem. It creates an incentive from the capacity and handling of the exceptionally enormous amounts of the computerized data that can't be investigated with the conventional figuring strategies. It's information whose scale, assortment and

intricacy required new engineering, methods, calculations, and the concentrate esteem and concealed information from it.

BIG DATA CHALLENGES FACED BY THE SMEs

BD changes the manner in which firms do their organizations at all levels and cycles, for example, obtainment, item advancement, store the executives, human asset the board, promoting, deals, appropriation, valuing and yield the executives, and marketing (Schmarzo, 2015). Obviously, the greater part of the BD projects is not finished. As per Alicke *et al.* (2016), numerous areas and business capacities are enduring because of the touchy effect of cutting-edge innovative and information-driven unrests. BD hindrances can be characterized by mechanical, hierarchical/administrative, human, and financial sets (Al-Qirim *et al.*, 2017). Likewise, Akerkar (2013) gathered BD challenges into three classifications including information challenges, which are like information unpredictability, measure difficulties identifying with information preparing methods, and the board difficulties, which partner with changing information into significant contributions to improve association's intensity. Be that as it may, Boyd and Crawford (2012) notice moral concerns identifying with information mining. Additionally, Bhosale and Gadekar (2014) have tended to information stockpiling difficulties, while, Tole (2013) managed the deficiency of gifted in-house information investigation mastery. The Challenges faced by SMEs in the adoption of process of BD:

Technological Barriers (TB)

This refers to the barriers related to technical things like infrastructure, usage of data, its software, its hardware, and it's processing.

IT Infrastructure (ITI)

This incorporates equipment, programming, and a framework that empowers firms to acclimatize IT developments rapidly. ITI includes computers, software's and other related hardware (Adrian *et al.*, 2018).

Data Barriers (DB)

This refers to the attributes of information that rise out of the information itself. BD is dynamic, heterogeneous, and universal; hence, taking care of such information to extricate significant data is testing (Sivarajah *et al.*, 2017).

Data Processing Barriers (DPB)

This refers to the capacity of the I.T platforms and applications to deal with the tremendous raw data's, and change them into the significant data (Adrian *et al.*, 2018). These incorporate catching/gathering, investigating, collecting, and coordinating, and sharing, and introducing information.

Economic Barriers (EB)

This is related to barriers related to financial aspects like cost of implementation of BD projects, its return on investments, installation charges, cost of the software and infrastructure development (Adrian *et al.*, 2018).

Costs (COS)

The adoption process of the BD is costly. Notwithstanding the declining cost of the data innovation, BD innovation is as yet costly. BD requires putting resources into new costly IT framework, human abilities, business specialists, and investigation devices (Delen & Ram, 2018).

Financial Resources (FR)

In this manner, the absence of adequate monetary assets or monetary availability to take care of the expense of BD and execution can bring about huge disappointment, which may upset the BD process (Lai *et al.*, 2018).

Return on Investment (ROI)

As such, the nonappearance of satisfactory financial resources or money related accessibility to deal with the cost of BD and execution can achieve gigantic disillusionment, which may agitate the BD process.

Organizational Barriers (OB):

This type of barriers refers to the problems related to organizational aspects like support from the top management, function of the structure of the organizations, and rules and regulation of the government (Ahmed *et al.*, 2018).

Top Management Attitudes (TMA)

The absence of top administration support and responsibility, are critical boundaries to IT development selection (Lamba and Singh, 2018). The executives can urge and propel workers to utilize BD applications by planning motivation frameworks and connecting them to BD use (Watson, 2019).

Organizational Structure (OS)

These incorporate open interchanges, cross-practical and hierarchal groups, and decentralization) has been widely referenced as quite possibly the main obstructions that impact BD projects (Lamba & Singh, 2018).

Government Rules and Regulations (GRR)

The part of administrative obstructions to BD is basic and generally referenced (Sun *et al.*, 2016). This job may include setting up approaches, rules, guidelines, and normalized datasets; giving IT foundation, making IT principles; and delivering insurance components (Bulger *et al.*, 2014).

Human Barriers (HB)

This type of barrier related to the employees working in the organizations like awareness among the employees for the BD adoption process, prior experience of the employees, and the training related to the working of BD.

People's Awareness (PA)

Absence of mindfulness is a significant issue with regards to IT and BD (Mikalef *et al.*, 2018). The absence of mindfulness and information about BD highlights, advantages, and hindrances generally deters firms from contemplating BD innovation.

Big Data Working Experience (BDWE)

The need to employ exceptionally gifted BD experts to effectively deal with the BD cycle is fundamental for firms. The requirement for information researchers, developers, and specialists is basic to receive BD and get its greatest advantages (Watson, 2019).

Big Data Training (BDT)

BD abilities can be gained through schooling, preparing, and work insight. Thusly, the absence of fitting instruction and preparing programs is one of the fundamental hindrances to BD (Malaka and Brown, 2015). Firms ought to give great preparing/instruction programs, adequate assets, strong offices, and suitable counseling administrations to encourage the BD process.

RESEARCH METHODOLOGY

SAMPLING

Responses were collected through a structured questionnaire from the plant managers, director, and the owners of the SMEs. The sample was selected from each strata through the technique of Stratified Random Sampling method as it allows population harmony from the sub population (Hair *et al.* 2010). The questionnaires were sent to 650 respondents, but only 293 respondents returned usable questionnaires, valid for analysis. To avoid common method, bias the research team has taken few fundamental precautions during the pre-data collection stage. A note was mentioned on the beginning of the questionnaire that indicated the survey is intended for academic research and confidentiality of data will be maintained.

However, after the data is collected the research team applied Harman's single factor test. Exploratory factor analysis was performed, and the results show that first factor explains maximum variance (24.056%) which is below recommended value of 50% (Podsakoff *et al.*, 2003). Structural equation modeling (SEM) and exploratory factor analysis (EFA) method was adopted for data analysis. The data analysis was done in four stages: analysis of demographics, validity and reliability test, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA). EFA was done to check the total variance explained to identify and group the variables using a rotated component matrix table. SPSS 20.0 was utilized for reliability tests and EFA on data collected. After that, CFA was implemented for testing and approving the applied models underlying. AMOS version 22.0 was being used for CFA on collected information for measuring

model outcomes as CFA decides whether a validity test on an estimated model be replicated (Hair *et al.*, 2010; Byrne, 2010). At last the model fit was determined by SEM for testing of hypothesis.

DEMOGRAPHICS OF THE RESPONDENTS

Leedy and Ormrod (2014) stated that a cross-sectional plan includes testing and looking at individuals from a few diverse segment gatherings. This methodology empowers the specialist to gather the basic information simultaneously. The table 1 below shows the demographics of the respondents. A questionnaire method was used. The firm in which total number of employees is in the range 51-100 respondents' percentage was 18% which is the highest. Followed by employees in the range 151-250 respondent's percentage was 17%. The rest are in the range 2650 employees respondent's percentage was 16%, the range 1-9 employees respondent's percentage was 15%, the range 101-150 employees respondent's percentage was 14%, the range 10-25 employees respondent's percentage was 12%, the range 251 and above employees respondent's percentage was 8%. The percentages of respondents' which are plant managers are 41% which is the highest. Followed by directors' are 35%, and owners' are 23%. The percentages of respondents' from type of firms which are medium enterprises are 39% which is the highest. Followed by micro enterprises are 31% and small enterprises are 30%.

Table 1: Demographics of the Respondents

Sl. No.	Characteristics	Percentage
I	Total Number of Employees	
A	1-9 employees	15
B	10-25 employees	12
C	26-50 employees	16
D	51-100 employees	18
E	101-150 employees	14
F	151-250 employees	17
G	251 and above	8
II	Respondents Current Position	
A	Owner	23
B	Director	35
C	Plant Manager	41
III	Type of Firms	
A	Micro enterprises	31
B	Small enterprises	30
C	Medium enterprises	39

DATA ANALYSIS

RELIABILITY AND VALIDITY

Cronbach's Alpha

The reliability test was performed for each factor based on cronbach's alpha (α) value introduces cronbach's alpha for the constructs. The values of all indicators or dimensional scales should be above the recommended value of 0.70 (Nunnally and Bernstein, 1994). Utilization of 7 points Likert scale was done in preparing the structured questionnaire. Hence, all the values are within the threshold as shown in the table II.

Composite Reliability

Composite reliability (CR) was also measured for all the components. It is measured to for internal consistency reliability because of its ability to provide better results (Henseler *et al.*, 2009). Three constructs CR values are > 0.7 which indicates that the composite reliability measures are reliable (Hair *et. al.* 2010) as shown in the table II.

EXPLORATORY FACTOR ANALYSIS (EFA)

The first step of the EFA was to evaluate the appropriateness of the sample size. SPSS 20.0 was utilized for EFA. The correlations between its items had been inspected utilizing the Bartlett's test of sphericity (Hair *et al.* 2010). Principal axis factoring was performed to identify meaningful bias and express the same qualities. KMO value for the current research is 0.737.

The minimum level set for this statistic is 0.60 (Hair, *et. al.*, 2010). The significance value is 0.000, which is less than 0.05, i.e., the probability value level acceptable. The extraction method used was principal axis factoring. Only the eigenvalues which have values greater than one were extracted as it explains maximum variance. For the components, the percentage of total variance explained by component 1 (28.354%), component 2 (20.423%), component 3 (13.672%), and component 4 (11.374%). The cumulative percentage of total variance explained by all three components is 73.824%.

The Rotated Component Matrix is important for interpreting the results of the analysis. Rotation helps in grouping the items, and each group contains more than two items at-least, which simplifies the structure. Hence, this is the aim of the goal of rotation. In this research, we have achieved this aim. There are 12 total variables which were grouped under three different components as shown in the table 2.

Table 2: Cronbach's alpha, Composite reliability, Rotated Component Matrix

Latent Variable	Indicators	Cronbach's alpha (α)	Composite reliability (CR)	Rotated Component Matrix
TB	ITI	0.731	0.844	.837
	DB			.858
	DPB			.705
EB	COS	0.753	0.861	.798
	FR			.826
	ROI			.838
OB	TMA	0.881	0.925	.877
	OS			.927
	GRR			.888
HB	PA	0.84	0.897	.805
	BDWE			.949
	BDT			.827

DISCUSSION

The current research found that BD barriers in Indian SMEs. The indicators which had significant impact are: ITI, DB, DPB, COS, FR, ROI, TMA, OS, GRR, PA, BDWE, and BDT.

The cronbach's alpha and composite reliability values were above 0.7 which is the recommended level (Nunnally 1978; Hair, et. al. 2010). The KMO value is 0.737 which is greater than 0.6 which is within the threshold level, (Tabachnick & Fidell 2007; Hair, et. al. 2010) which allows the data for factor analysis. The extraction method used was principal axis factoring. The total variance explained was 73.824% and the variables were grouped under four components TB, EB OB and HB. The values which were below 0.4 were suppressed in the rotated component matrix table and only the values more than 0.4 were displayed as output. The component TB relates to the technological barriers for the adopting BD. It comprises of three sub-components: ITI, DB, and DPB and each loadings are 0.837, 0.858, and 0.705. EB relates to economic barriers for adopting BD. It comprises of three sub-components: COS, FR, and ROI and each loadings are 0.798, 0.826, and 0.838. OB relates to the organizational barriers for adopting BD. It comprises of three sub-components: TMA, OS, and GRR and each loadings are 0.877,

0.927, and 0.888. HB relates to human barriers for adopting BD. It comprises of three sub-components: PA, BDWE, and BD'T and each loadings are 0.805, 0.949, and 0.827. Hence, the loadings of subcomponents are $> |.40|$. Earlier research in different countries showed the difficulties in the adoption process of BD adoption in the SMEs (Kızıltan, 2018). In the modern area, BD experts accept that the hierarchical boundary set is the most significant. This area needs to zero in additional on interior hierarchical obstructions, for example, top administration backing and responsibility, authoritative structure, strategy, and culture (Alalawneh, & Alkhatib, 2020). Moreover, information cycles and IT framework obstructions should be settled. At long last, the modern area structure and merchant accessibility are the most significant sub-hindrances to be thought of. The public sector is normally the greatest area in most creating economies (Polkowski *et al.*, 2017). Individuals and authoritative boundary sets oblige BD inside this area (Nguyen, & Liaw, 2020). There are clear issues with authoritative culture, top administration, and arrangements toward BD (Moktadir *et al.*, 2019). Also, individuals' schooling, experience, preparing, and level of mindfulness should be assessed and improved to help the cycles of BD. More work is expected to improve the public area's preparation for BD.

CONCLUSION

The objective of this research is find the problems being faced by the Indian SMEs in the adoption process of BD. For this a structured literature review was carried out to find out the problems that are being faced by the Indian SMEs in the adoption process of BD in their operations. A questionnaire was developed for a survey based research in the SMEs across the nation. The target populations were mainly the employees working in the SMEs. Twelve problems were identified affecting the BD adoption in the Indian SMEs. The variables were grouped under four categories 'TB, OB, HB, and EB.

Further research can be carried out in different sectors like manufacturing, automobiles, and healthcare.

REFERENCES

- [1] Abdul Moktadir, M. A., Ali, S. M., Paul, S. K., & Shukla, N. (2019). Barriers to big data analytics in manufacturing supply chains: A case study from Bangladesh. *Computers & Industrial Engineering*, 128, 1063–1075.
- [2] Adrian, C., Abdullah, R., Atan, R., & Jusoh, Y. Y. (2018). Conceptual model development of big data analytics implementation assessment effect on decisionmaking. *IJIMAI*, 5(1), 101–106.
- [3] Ahmed, V., Aziz, Z., Tezel, A., & Riaz, Z. (2018). Challenges and drivers for data mining in the AEC sector. *Engineering, Construction and Architectural Management*, 25(11), 1436–1453.
- [4] Akerkar, R. (2013) *Big Data Computing*. 1st edn. New York: CRC Press, Taylor & Francis Group.

- [5] Alalawneh, A. A., & Alkhatib, S. F. (2020). The barriers to big data adoption in developing economies. *The Electronic Journal of Information Systems in Developing Countries*, e12151.
- [6] Al –Hujran, O., Wadi, R., Dahbour, R., Al –Doughmi, M., & Al –Debei, M. M. (2015). Big data: Opportunities and challenges. In *The Fifth International Conference on Business Intelligence and Technology* (pp. 978–1).
- [7] Alicke K., Glatzel C., Karlsson P. –M., & Hoberg K. (2016). *Big Data and the Supply Chain: The Big –Supply –Chain Analytics Landscape* (Part 1). McKinsey & Company Operations.
- [8] Al –Qirim, N., Tarhini, A., & Rouibah, K. (2017). Determinants of big data adoption and success. In *Proceedings of the International Conference on Algorithms, Computing and Systems* (pp. 88–92).
- [9] Bhadani, A., & Jothimani, D. (2016). Big data: Challenges, opportunities, and realities. In M. K. Singh & D. G. Kumar (Eds.), *In Effective Big Data Management and Opportunities for Implementation* (pp. 1–24). Pennsylvania, PA: IGI Global.
- [10] Bhosale, H. S. and Gadekar, D. P. (2014) ‘A Review Paper on Big Data and Hadoop’, *International Journal of Scientific and Research Publications*, 4(10), pp. 1–7.
- [11] Boyd, D. and Crawford, K. (2012) ‘Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon’, *Information Communication and Society*, 15(5), pp. 662–679.
- [12] Bulger, M., Taylor, G., & Schroeder, R. (2014). Data –driven business models: Challenges and opportunities of big data, Oxford, UK: Oxford Internet Institute. Research Councils UK: NEMODE, *New Economic Models in the Digital Economy*.
- [13] Delen, D., & Ram, S. (2018). Research challenges and opportunities in business analytics. *Journal of Business Analytics*, 1(1), 2–12.
- [14] Gunasekaran, A., Papadopoulos, T., Dubey, R., Wamba, S. F., Childe, S. J., Hazen, B., & Akter, S. (2017). Big data and predictive analytics for supply chain and organizational performance. *Journal of Business Research*, 70, 308– 317.
- [15] Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010). *Multivariate Data Analysis*. 7th ed., Prentice Hall, Upper Saddle River, NJ.
- [16] Henseler, J., Ringle, C.M. and Sinkovics, R.R. (2009), “The use of partial least squares path modeling in international marketing”, *Advances in International Marketing*, Vol. 20 No. 1, pp. 277 –319.
- [17] Jin, X. *et al.* (2015) ‘Significance and Challenges of *Big Data Research*’, *Big Data Research*, 2(2), pp. 59–64.
- [18] Kızıltan, A. (2018). *Challenges of Big Data Adoption in Turkish SMEs: A Case Study*.
- [19] Kubina, M., Varmus, M., & Kubinova, I. (2015). Use of big data for competitive advantage of company. *Procedia Economics and Finance*, 26, 561–565.
- [20] Lai, Y., Sun, H., & Ren, J. (2018). Understanding the determinants of big data analytics (BDA) adoption in logistics and supply chain management. *The International Journal of Logistics Management*, 29(2), 676–703.
- [21] Lamba, K., & Singh, S. (2018). Modeling big data enablers for operations and supply chain management. *International Journal of Logistics Management*, The, 29(2), 629–658.
- [22] Malaka, I., & Brown, I. (2015). Challenges to the organizational adoption of big data analytics: A case study in the South African telecommunications industry. In *Proceedings of the 2015 Annual Research Conference on South African Institute of Computer Scientists and Information Technologists* (pp. 1–9). Stellenbosch South Africa.

- [23] Mallah, R. (2019). *The Other Five V's of Big Data: An Updated Paradigm*.
- [24] Mikalef, P., Pappas, I. O., Krogstie, J., & Giannakos, M. (2018). Big data analytics capabilities: A systematic literature review and research agenda. *Information Systems and e-Business Management*, 16(3), 547–578.
- [25] Moktadir, M. A., Ali, S. M., Paul, S. K., & Shukla, N. (2019). Barriers to big data analytics in manufacturing supply chains: A case study from Bangladesh. *Computers & Industrial Engineering*, 128, 1063–1075.
- [26] Nguyen, G. T., & Liaw, S. Y (2020). *Big Data Application: From Identifying Barriers to Finding Solutions*.
- [27] Nunnally, J.C. & Bernstein, I.H., 1994, *Psychometric Theory*, 3rd edn., McGraw –Hill, Chicago, IL.
- [28] Ogrea, C. (2018). Relevance of big data for business and management. Exploratory insights (Part I). *Studies in Business and Economics*, 13(2), 153–163.
- [29] Polkowski, Z., Khajuria, R., & Rohadia, S. (2017). Big Data Implementation In Small And Medium Enterprises In India And Poland. *Scientific Bulletin–Economic Sciences*, 16(3), 149–161.
- [30] Raguseo, E. (2018). Big data technologies: An empirical investigation on their adoption, benefits and risks for companies. *International Journal of Information Management*, 38(1), 187–195.
- [31] Robmann, B., Canzaniello, A., von der Gracht, H., & Hartmann, E. (2018). The future and social impact of big data analytics in supply chain management: Results from a Delphi study. *Technological Forecasting and Social Change*, 130, 135–149.
- [32] Schmarzo, B. (2015). *Big data MBA: Driving business strategies with data science*. Indianapolis, IN: John Wiley & Sons.
- [33] Sivarajah, U., Kamal, M. M., Irani, Z., & Weerakkody, V. (2017). Critical analysis of big data challenges and analytical methods. *Journal of Business Research*, 70, 263–286.
- [34] Sun, S., Cegielski, C. G., Jia, L., & Hall, D. J. (2016). Understanding the factors affecting the organizational adoption of big data. *Journal of Computer Information Systems*, 58(3), 193–203.
- [35] Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using Multivariate Statistics* (Vol. 5, pp. 481–498). Boston, MA: Pearson.
- [36] Tabakow M., Korczak J., Franczyk B., *Big Data – definicje, wyzwania i technologie*
- [37] Tole, A. A. (2013) 'Big Data Challenges', *Database Systems Journal*, 4(3), pp. 31–40.
- [38] Wamba, S. F., Akter, S., Edwards, A., Chopin, G., & Gnanzou, D. (2015). How 'big data' can make big impact: Findings from a systematic review and a longitudinal case study. *International Journal of Production Economics*, 165, 234–246.
- [39] Watson, H.J. (2019). Update tutorial: Big data analytics: Concepts, technology, and applications. *Communications of the Association for Information Systems*, 44(1), 364–379.

Cultivation of Entrepreneurs for the Economic Growth of India: A Study of the Attitudes and Intentions of College and University Students

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Abstract: The economy, of a country depends much on the revenue generating business, that helps in the generation of employment and production of goods and services. Entrepreneurship development and organization of business. Development of business is important for the economic growth of a country. Business not only generates employment, goods and services, it also helps in the economic growth of a country. The present paper focusses on the attitudes and intentions of students towards entrepreneurship, giving due regard to their personal characteristics and future plans. The paper also talks about an empirical study that analyses bachelor degree students and master's degree students' outlook towards being an entrepreneur. The use of Likert scale is seen for measurement of attitudes, based on opinions and motivations towards entrepreneurship.

The study also throws light into the restrictions faced by the aspiring entrepreneurs and ways such restrictions are overcome, including the part the university plays in fostering entrepreneurship amongst students. The study concludes with the result, where venturing into entrepreneurship is postponed by respondents of the bachelor's degree course. It also makes the understanding of motives, perceptions and characteristics, skills of aspiring entrepreneurs very important, to make a generalized assumption. The research provides a proposition to develop the entrepreneur skills of the students, where the role of the universities stands important for stimulating entrepreneurial initiative among students.

Keywords: Developing Market Economy, Attitude, Intention, Characteristics, Empirical, Motivation, Fostering, Venturing

INTRODUCTION

Indian economy was just \$189.438 billion in 1980, having the 13th position rank wise, India's growth structure is splendid. Today its service sector accounts for 60 percent of the economy, and 28 per cent of employment. Manufacturing remains a thought of concern, looking to be pulled up by the State through the make in India governmental initiative. The contribution of the agricultural sector although has declined, to an alarming 17 per cent, it still is at a higher step compared to its western counterparts.

India thus sees a lot of scope in achieving economic equilibrium with the growth of entrepreneurship initiatives. These are the ones those create jobs and increases the production of goods and services, thus making India independent. They are also the risk takers, a trait that helps a country to look forward for a better and brighter future.

NEED FOR ENTREPRENEURS IN THE WAKE OF COVID 19 PANDEMIC

With the spread of coronavirus across the globe, sustainability fell apart, entrepreneurship and its growth went into the world of darkness. survival of economy post pandemic relied much on these budding entrepreneurs. Embracing of the new normal trends included, and must incorporate technological amendments in business operations that can accelerate work from home, again reaching young students through online conferencing tools ,and investing in projects that will shape according to the needs of flexibility.

OBJECTIVES OF THE STUDY

- To understand Students attitude towards Entrepreneurship.
- To analyze the role of Educational institutions towards entrepreneurship

METHODOLOGY

A survey was conducted, which included students mostly from the bachelor's degree of Business administration course, and master's degree course. Where the respondents were selected on a random basis, from amongst the colleges in Kolkata. The sample size being 200, questionnaire was distributed and answers was recorded for the purpose of analysis.

STATEMENT OF THE PROBLEM

India being a nation having 60 per cent of the population, under 30, makes it necessary to understand this younger generation. Their idea of independence and work, their attitude towards serving companies, their attitude towards balancing independence and earning livelihood, their perception towards innovation and how such can have an influence in the area of business today. These are some of the issues that needs proper understanding for the growth of the country. The present research paper tries to understand the perceptions, mindsets, attitudes, outlooks of the generation next, towards business and entrepreneurship. the paper also throws light into the role, educational institutions play in shaping the attitudes, personalities and perception of this generation towards entrepreneurship.

LITERATURE REVIEW

The growing up of entrepreneurship has always been found, in the process of the growing up of the human section, although the terminology surpassed a lot of interpretations. The most relevant definition is “the procedure of innovation and using opportunities with lots of effort and perseverance together with accepting financial, psychological and social risks.” It is indeed motivated by earning profit promotion, self-satisfaction and independence” (Hisrich,2007:172). Baum j Robert and Locke Edwin A (2011) in their paper titled the relationship of Entrepreneurial traits, skill, motivation to subsequent venture growth concluded through structural equation model found that there is a relationship between entrepreneurial traits, skill and motivation of individuals. Jose c Sanchez (2004) in her paper university training for entrepreneurial competencies, concluded that entrepreneurial education does have a positive impact on the potential students. S Mitchelmore, and J Rowley, (2010). In their paper titled Entrepreneurial competencies: a literature review and development agenda, concluded that the relationship between entrepreneurial competencies and performances need thorough research. Thus, instilling entrepreneur skills in students and studying the causes that retards growth of such skills of entrepreneurship marks much importance

DATA ANALYSIS AND INTERPRETATION

The data gathered from students of the under graduate and graduate levels, via questionnaire, helped extract the traits, those define entrepreneurs. The data shows that there has been no biasness, in terms of gender or age, in gathering information, and the results are true to the core.

The table below explains the data distribution

Table 1: Distribution of Respondents by Specialty, Gender, and Age

Finance	32
Marketing	28
NA (First and Second year)	150
Post Graduates	8
Male	101
Female	99
18–20 years	103
21–23 years	57
Above 23 years	40

Direct questions about the intentions of students to start business, the reason to justify such desires, the hurdles faced, and ways to overcome such hurdles, were incorporated in such questionnaire.

A 5-point Likert scale was used to measure, attitudes, intentions and opinions, where the range labelling was (1=completely agree, 2=agree, 3=a combination of both, 4=moderately not agree, 5= disagree). the mean of every student determined their trait, whether positive or negative. The lower the mean, the higher the tendency to be an entrepreneur.

The study also focused on the scope of growth and also had questions that would help analyze, the role of the colleges and educational institutions in fostering entrepreneurship in students. The questions did include specifications about the subjects included in their curriculum, that did intensify the desire of the students to be successful entrepreneurs. The study also focused on the scope development in the academia, that would build these budding businessmen for a brighter India tomorrow.

INTERPRETATION

- About 60% of the respondents showed immense interest to become entrepreneurs
- 50% of the respondents who showed interest, in business, was ready and willing to accept any challenges that could come in their journey
- Few of the respondents, disclosed their financial disability to pursue their dream.
- Women respondents about 70%, of them, showed much calculated and pragmatic view point, where their desire to own or start business can become reality only if it is backed up by family enthusiasts.
- 60% of the respondents gave much credit to their colleges in motivating such desires of entrepreneurship.
- 30% of the respondents depicted lack of knowledge and intellect, towards starting a business, although resources were not their constraint.

FINDINGS

- The study witnessed, the energy and the propulsion of the students to become entrepreneurs
- The study also saw the initiatives taken by the colleges in promoting entrepreneurship skills amongst students by organizing seminars, workshops, etc.
- The formation of cells and committees by the colleges for such skill development was also a milestone development for the colleges.

- The study also observed the apprehensions amongst students about 30% of them about receiving any sort of governmental financial.
- The research also brought forward the anxieties faced by the students due to parental pressure of fitting into the norm of being a doctor or an engineer.
- Respondents about 10% of them was also apprehensive about investment plans in India, due to its poor economic growth as compared to the western countries.

CONCLUSION

The study actually helped propagating the thought towards finding out the real meaning of entrepreneurship. The word itself endorses creative thinking, bearing risks, embracing challenge. Such thus redefines the true meaning of entrepreneurs, which we find embedded in the spirit of these young respondents. To help a country overcome the shackles of economic degradation it is the growth of entrepreneurs that the country should focus on.

The study did exhibit discrepancies of theory and practical understanding of entrepreneurship. The lack of understanding of the need of knowing what exactly is entrepreneurship, amongst students of this generation posed to be one of the greatest threats for the economically developing country like India. The need for assistance from every corners of a student life was depicted through this study. Development of a nation lies in the hands of its inhabitants too, and this finds its evidence in the study. Assistance from family in terms of providing mental support and financial assistance if possible, stands to be one of the inevitable steps to success, where understanding must be the bottom line for such assistance. Again, government should play an important part in the growth of such skill development among students, this was also what the study furnished. The role of colleges and universities in endorsing entrepreneurship plays a very significant role for the development of the skill amongst potential students. Apart from laying hands in teaching the methodology part the understanding of true entrepreneurship by the students is also the responsibility of the colleges, which will bring forth the true picture for the potential entrepreneur.

REFERENCES

- [1] Baum, J.R. and Locke, E.A., 2004. The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology*, 89(4), p. 587.
- [2] Sánchez, J.C., 2011. University training for entrepreneurial competencies: Its impact on intention of venture creation. *International Entrepreneurship and Management Journal*, 7(2), pp. 239 –254.
- [3] Mitchelmore, S. and Rowley, J., 2010. Entrepreneurial competencies: a literature review and development agenda. *International Journal of Entrepreneurial Behavior & Research*.
- [4] Baum, J.R., 1996. *The Relation of Traits, Competencies, Vision, Motivation, and Strategy to Venture Growth*.
- [5] Sánchez, J.C., 2013. The impact of an entrepreneurship education program on entrepreneurial competencies and intention. *Journal of Small Business Management*, 51(3), pp. 447 –465.

- [6] Kaur, H. and Bains, A., 2013. Understanding the concept of entrepreneur competency. *Journal of Business Management & Social Sciences Research*, 2(11), pp. 31 –33.
- [7] Al Mamun, A., Nawi, N.B.C. and Shamsudin, S.F.F.B., 2016. Examining the effects of entrepreneurial competencies on students' entrepreneurial intention. *Mediterranean Journal of Social Sciences*, 7(2), p. 119.
- [8] van Dam, K., Schipper, M. and Runhaar, P., 2010. Developing a competency –based framework for teachers' entrepreneurial behaviour. *Teaching and Teacher Education*, 26(4), pp. 965 –971.
- [9] Man, T.W. and Lau, T., 2005. The context of entrepreneurship in Hong Kong. *Journal of Small Business and Enterprise Development*.
- [10] Man, T.W. and Lau, T., 2005. The context of entrepreneurship in Hong Kong. *Journal of Small Business and Enterprise Development*.
- [11] Wu, W.W., 2009. A competency –based model for the success of an entrepreneurial start –up. *WSEAS Transactions on Business And Economics*, 6(6), pp.279 –291.
- [12] Akhmetshin, E.M., Larionova, G.N., Lukiyanchina, E.V., Savitskaya, Y.P., Aleshko, R.A. and Aleynikova, O.S., 2019. The influence of educational environment on the development of entrepreneurial skills and competencies in students. *Journal of Entrepreneurship Education*, 22, pp.1 –13.
- [13] Åstebro, T., Bazzazian, N. and Braguinsky, S., 2012. Startups by recent university graduates and their faculty: Implications for university entrepreneurship policy. *Research Policy*, 41(4), pp. 663 –677.

Examining the Integration of Determinants: Employee Turnover Intention

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Abstract: Employee is the vital resource of the organisation .It is important for an organisation to reduce employee turnover for sustainable performance in the competitive business environment so, it is essential to understand employee turnover intention (ETI).ETI is complex in nature, to better recognize this phenomenon, we present theoretical framework which integrates the determinants of ETI such as job embeddedness, employee engagement, and motivation in a framework. Leadership style has been considered as a moderating variable among motivation and employee turnover intention. This study examines the role of determinants such as employee engagement, job motivation, and job embeddedness to predict ETI. Employee turnover intention is supported by the theory of planned behaviour; whereas the determinants of ETI has been supported by the self- determination theory, theory of embeddedness and theory of employee engagement in a theoretical framework. We have arrived at the four propositions from this theoretical literature review, which can be tested empirically for future studies. At the end prospective research direction have been stated.

Keywords: Job Embeddedness, Employee Engagement, Job Satisfaction, Motivation Employee Turnover Intention, Employee Churn

JEL Classification Code: J63, M12, J24, J28

INTRODUCTION

Employee turnover is a permanent exit and the end of employee-employer work association. (Van der Merwe & Miller, 1988) During the departure of employee the organisation not only faces the consequences of monetary and productivity loss but also face consequence over organisation knowledge, lower employee morale, loss of idea, some time even customer. In human resource management , employee turnover is consider as one of the most essential study ,there are around two thousand research study on voluntary employee turnover published during 1920 to 2020 (T.W. Lee *et al.*, 2018). Employee turnover is the major issue in small and medium scale industries (Okolocha & State, 2020).Voluntary employee turnover is considered to be

most difficult to reduce than involuntary employee turnover. Varieties of explanatory constructs are involved attempting the organisation to create a downward graph of employee turnover.

The proactive approach of the organisation will lead to the sustainability in the dynamic business environment. Finding a predictive solution to understand which potential employee are at the higher risk of leaving the organisation, have become prime vital in the organisation. Turnover intention is the tendency or intention of employees to quit the place of work on their own willingness. The retention report (Mahan *et al.*, 2019) claim that \$469 billion is the employee turnover expenses which could be prevented by investing small fund to retain the qualified employee. To retain the qualified employee, the organisation must know employee turnover intention and the factors responsible for controlling the phenomenon. (Upadhayay, L. and Vrat, P. 2016), in their study demonstrated that it cost employer more than 100 percent of individual employee yearly salary, as the employee turnover expenditure. To get a predictive solution employer must be in the position to enumerate the metrics which are most and least responsible in influencing the intention of employee to leave the organisation.

The previous studies have indicated the importance of various determinants to reduce employee turnover intention. However this review anticipates the vital determinants of the employee turnover intention, such as Employee Engagement, Job motivation, and Job embeddedness constructs which make employer understand employee turnover intention. The studies consider employee turnover intentions as a dependent construct and its determinants as an independent latent construct. Further with its theoretical review it supports the propositions in the study.

LITERATURE REVIEW

This literature review is divided into themes consisting of determinants of employee turnover intention.

EMPLOYEE TURNOVER INTENTION

Ngo-Henha (2017) Employee turnover intention is unclear in nature, it shows the approach that an employee has towards the organisation. The mind-set of the employee is complex and needed some fundamental components to support their understanding. (Mobley *et al.* 1979) The employee intention to separate from the company is due to various factors such as individual values, personal employee features, work-related and employee-market prospect, and organizational factors. (Hussein Alkahtani, 2015) considered Employee-organization link as a reciprocal relationship therefore, it is vital to understand the factors that may add to employee turnover intention. In the previous studies various determinants of employee turnover intention is been studied, in this

study we conceptualized job embeddedness, employee engagement, and motivation as the construct which impact employee turnover behaviour in the organisation (figure 1).

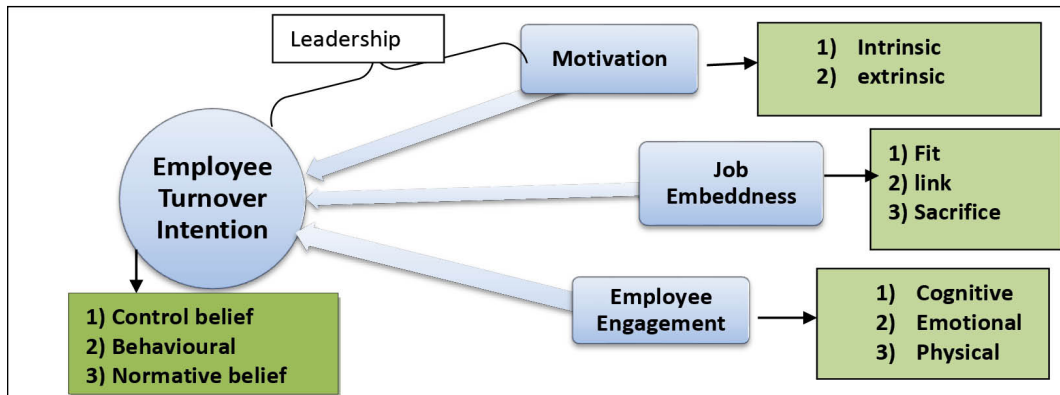


Fig. 1: Integration of the Construct (author)

DETERMINANTS OF EMPLOYEE TURNOVER INTENTION

Shweta Jha (2009) advised organization to consider employee turnover intention as holistic approach in any organization, because there is no single factor that is credited to turnover intentions. The turnover intention cannot be studied with isolated factor; hence corrective assessment should also have a combined framework.

Job Embeddedness

Mitchell *et al.* (2001) defined job embeddedness as the compilation of factors that influence employee retention. The researcher assess personal characteristic, job satisfaction, organisation commitment, job embeddedness, job search, perceived alternative, and intent to leave. The study identified three constructs such as job fit, links and sacrifice, further mediating variable between specific on the job and off the job factors and employee retention. Here, Off the job is perceived value over community of the employee and on the job is perceived value towards the organisation. (Mallol *et al.*, 2007) suggested strong embeddedness in the community was not beneficial in predicting voluntary turnover, but on the job embeddedness predicted the voluntary turnover. Job embeddedness is one of the reason to proactive employee motivation (Bashir *et al.*, 2019).

Motivation

(Legault, 2020) expressed Intrinsic motivation (IM) is a natural tendency involving in activity which internally make one happy and satisfied where, Extrinsic motivation (EM) denotes the achievement of favourable outcome. (Dysvik Anders et al 2008) give the understanding that managers need to focus more on building intrinsic motivation to effectively reduce the employee turnover intention. (Herzberg, 1965) to get high

performance from the employee, motivation has to be considered as vital factor. Reward, career advancement, empowerment are most influencing determinants for assessing employee motivation. (Gautam, 2019) empirically tested employee turnover intention with employee motivation achieved from reward structure, resulting higher motivation has a significant in decreasing employee turnover intention.

Employee Engagement

Employee engagement is a constructive, determined and enveloping job-related intellectual condition characterized by vigour, enthusiasm and significance towards job and organization (Schaufeli & Bakker, 2004). Employee engagement has been related to organizational performance, and increasingly, enhancing employee engagement has been a primary priority for companies at present (Gustomo *et al.*, 2019). Employee engagement can also be termed as organisation commitment, employee commitment. (Meyer & Allen, 1991) model of commitment, suggested that based on the exchange principle employee tend to develop affective commitment, toward the organisation, secondly continuance commitment is anything that is associate in increasing the employee expense to leave the organisation, lastly normative commitment which develop employee reasons not to quit the organisation through socialization process in the organisation. (Sow *et al.*, 2016) concluded that higher the normative commitment, less is the employee turnover intention. (Kahn, n.d., 1990) used grounded theory approach to empirically demonstrated the psychological condition of the worker in relation to their duties engagement and their disengagement towards duties founded that employee tend to be more psychologically presented for the duties and tend to be engaged, when they are offered psychology safety and psychological meaningfulness.

THEORETICAL FRAMEWORK

This study examine employee turnover intention, employee engagement, job motivation, and job embeddedness with the support and combination of the theory of planned behaviour, self-determination theory, theory of job embeddedness and theory of employee engagement. Each theory has been considered according to the 4th industrial revolution. Theory of planned behaviour is supporting the parameters of employee turnover intention study; where as the, theory of employee engagement, theory of job embeddedness and self-determination theory have been considered together to frame the constructs for determinants of employee turnover intention.

THEORY OF PLANNED BEHAVIOUR

To predict intention (Ajzen, 1991) in, Theory of planned behaviour gave the understanding to the person's intention to acquire certain behaviour. It explain 's overall behaviour to which a person can apply self control. According to this theory, behaviour intention is the key variable which is dominated by attitude that a person's understand which could lead to certain outcome according to person's need and wants

and subjective which may be guarded by the view of the links of the persons within or outside its society, Human intention is guided by three thoughts behavioural beliefs, normative beliefs, and control belief. It was founded that actual behaviour is not always formed due to behaviour intention, so it added a new construct perceived behavioural control. (Fitria Lia , Hariandi Bambang, 2017) new construct is added by the (Ajzen, 1991) to develop the theory of reasoned action . Perceived behavioural control seem at whether the employee has the tools or the means to posses the behaviour of turnover intention.

Employee turnover is the employee behavioural outcome which in other word could be said as employee turnover intention.(Tarjo et al., 2019) in their examination of theory of planned behaviour, observed that real behaviour is not simple and difficult to understand ,so the expected thing to monitor is the tendency for a behaviour to arise.

SELF-DETERMINATION THEORY

Ryan, R.M., & Deci, E.L. (2000) Self-Determination Theory (SDT) represents a broad framework for the study of human motivation and personality. (Deci, E.L., & Ryan, R.M. 1985) distinguished the two constructs intrinsic and extrinsic motivation. Intrinsic motivation and extrinsic motivation is autonomous motivation assumption in this theory. Intrinsic motivation is the self need to perform an activity and achieve personal goal. , while extrinsic motivation is to perform an activity when something is expected in return of it or avoided to receive anything unpleasant .Intrinsic is autonomous or self determined (Ryan & Connell, 1989).In a organisation setting, more autonomous employee might have greater tendency to perform their duties as they inherently value to achieve for its personal fulfilment of goal and reduced employee intention to leave the organisation. Extrinsic motivation is considered to be controlled or non-self determined .In controlled situation of the organisation, employee might motivate toward their work as their behaviour is influenced by extrinsic motivation. (Miao et al., 2020) The intention to leave the organisation is influenced by extrinsic motivation as well as intrinsic motivation.

THEORY OF EMBEDDEDNESS

Job embeddedness had brought together all the factors due to which, committed intend to leave their duties. The construct of job embeddedness include employee links to other people (Mitchell *et al.*, 2001)The link can be considered as a formal or informal relation with other people , group or institution. The link-web can be between social, psychological and financial web .It suggest that, more the number of the link between the individual and the web , better is the person bond with the organisation .Employee need to rework on these link if they intend to leave the organisation.

Fit, according to (Mitchell *et al.*, 2001) in the job embeddedness theory is an employee personal values , career goal and future plans which should fit according to the organisation culture and the job demand. The employees also consider how good they fit to the community and the surrounding of the organisation environment. Theory supposed that the superior the fit, higher is the probability of an employee to remain with the organisation.

Sacrifice enumerates the benefit that an employee could receive, if they leave the job. Employee gives the weight age to the kind of sacrifice such as comparable salary, switching cost, pension plan.

THEORY OF EMPLOYEE ENGAGEMENT

Employee engagement states the relation connecting an organisation and employee. It is considered that better employee engagement result in higher performance. (Kahn, n.d.) Define employee engagement as the harnessing of establishment members' selves to their job roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances. Cognitive is the idea that an employee has about his organisation and its principles, emotional is the sentiment an employee has about his peer, superior and behavioural is what the employees exhibits at work commitment. Disengaged employee is least bother about their organisation, leading to greater tendency to leave the job.

The combination of literature review and theoretical framework give us the understanding of the following propositions. The four proposition is framed in this study.

IMPACT OF MOTIVATION ON EMPLOYEE TURNOVER INTENTION

Skelton *et al.* (2019) noted motivation theory of (Herzberg *et al.* 1959) have a significant role to improve the satisfaction of the employee towards their duty. It is vital for superior to understand both job embeddedness and job satisfaction to reduce turnover intent. (Belias Dimitrios, 2004) considered intrinsic and extrinsic motivation effects of job satisfaction. (Shibiti, 2019) concluded employee when satisfied with monetary motivation, training and career opportunity show increased level fit and tendency to sacrifice-organisation. (Parker *et al.*, 2010) identified proactive goal , self initiate effort to bring difference in work environment ,people energized to motivation are influenced by leadership , work design and organisation climate. (Tri Wiliyanto *et al.*, 2020) studied job satisfaction and motivation as a meditating variable and had negative correlation on employee turnover intention .Further researcher concluded that work environment positively relate to the motivation and job satisfaction of the employee and increasing the motivation and job satisfaction would reduces the employee turnover intention.

(Gan *et al.*, 2020) claimed the importance of the direct and indirect effects of public service motivation on employee turnover intention single research model by placing a satisfaction and organizational commitment or employee engagement as a intervening constructs. Researcher recommended that public staff with high public service motivation levels had fewer tendencies to leave the organisation.

Therefore:

Proposition 1: Motivation is positively related to the employee turnover intention.

IMPACT OF EMPLOYEE ENGAGEMENT ON EMPLOYEE TURNOVER INTENTION

Employee engagement is consider as a indication of employee unenthusiastic to continue in the company(Hom *et al.*, 2017). (Gupta & Shaheen, 2017) illustrated the construct psychological capital and its consequence on employee engagement and employee turnover intention, their study concluded the strong relation among the change in the level of psychological capital with work engagement and employee turnover intention. (Vermooten *et al.*, 2019) to engage employee better in their duties, job crafting and pro active personality of employee plays significant role in organisation. (Gupta & Shaheen, 2017) illustrated the construct psychological capital and its consequence on employee engagement and employee turnover intention, their study concluded the strong relation among the change in the level of psychological capital with work engagement and employee turnover intention. (Chebet *et al.*, 2019) in a cross sectional research on Eldoret town (n= 365) staff examine the effects of employee engagement on employee turnover intention which was guided by expectancy theory. Researcher interpreted that employee engagement had significant influence on employee turnover intention $P < 0.05$, indicated by respondent's employee that they were not given enough opportunities to use their ideas for improved service delivery. (Miao *et al.*, 2020) verified that motivation had a constructive impact on job engagement. Researcher also emphasis that employees want that companies should make the motivational strategies for the betterment of employees. (Holston Okae, 2018) qualitatively studied hospitality industry (n=156) indicated that motivation is significantly and positively correlated with employee engagement and compensation. Researcher also suggest the factors such as enagement , job satisfaction,employee compensation and environment can affect customer and work community (Ahmad, 2018) in a quantitative research approach studied the relationship of reciprocation among the employee and the organisation to understand the factors which induced the employee intention pattern. Researcher also aims to inquire about the causation of employee turnover intention with the factors such as employee satisfaction and organisation commitment or employee engagement. (Ahmad, 2018) concluded the perceived benefit of extrinsic job, as employee are satisfied due to their extrinsic job characteristic, employees reciprocate treatment by the employer by adjusting their attitudes and behaviour accordingly at their work places. (Memon *et al.*, 2015) with the support of social exchange theory suggested that higher work engagement could be

achieved by attaining a better fit with organisation. (Shuck, B et.al 2011) in their study noted Job fit, sentimental commitment, and psychological climate were all significantly related to employee engagement.

Therefore:

Proposition 2: Employee Engagement is positively related to the employee turnover intention.

ROLE OF JOB EMBEDDEDNESS OVER EMPLOYEE TURNOVER INTENTION

Job embeddedness concept was developed to understand the employee behaviour of staying the organisation, it has further evolve by the researcher in linking to the other factors such as employee engagement or affective commitment (Qian *et al.*, 2019). (Mitchell *et al.*, 2001) studied empirical established that people who are embedded in their job have less intent to leave and do not leave as readily as those who are not embedded, it also propose that job embeddedness adds to the prediction of turnover. (Yang *et al.*, 2019) in a quantitative approach concluded that (entrepreneurial leadership → job embeddedness → turnover intention) as a best path to build job embeddedness which leads to improved employee approach and reduces the employee turnover intention. (Takawira *et al.*, 2014) empirical examines the relationship of job embeddedness and work engagement and staff intention to leave the institution at higher education in Africa. Researchers concluded to reduce employee turnover intention; higher job embeddedness and work engagement is significant. Employer should provide improved salaries, training and career development opportunities for their employees, as this will contribute to a high degree of fit to both the community and the workplace, strengthen the relationships workers have in the organisation and increase the perceived organisational sacrifice that employees would suffer if they quit their jobs.

Ng & Daniel (2010) in a longitudinal study reported that job embeddedness is significantly associated with innovation –related behaviour by controlling the job perception and job attitude variable ,and suggested that job embeddedness improve employee motivation to create, spread, and execute novel ideas in organizations. Thus we can consider the job embeddedness construct affecting the employee intention to leave the organisation Therefore:

Proposition 3: Job embeddedness is positively related to employee turnover intention

LEADERSHIP

M.C.C. Lee *et al.* (2019) demonstrated the effects of transformational and transactional leadership styles on work engagement and turnover intention through supervisory coaching and performance feedback, which interpreted that transformational leader,

are probable to improve their employees in the course of managerial coaching and performance feedback, which would, encourage enhanced work engagement and reduce employee turnover intention. Researchers argued that employees feel more motivated towards their duty and become more engaged to their workplace if their leaders are concern about their performance at workplace. Leadership style can be a prospective means through which motivation (independent variable) can generate changes on employee turnover intention (dependent variable). Leadership style is affecting the strength of the dependent and independent variable.

Therefore:

Proposition 4: Leadership style acts as a moderating variable among motivation and employee turnover intention.

FUTURE RESEARCH AND CONCLUSION

Human resource plays a vital role for the long term success and sustainability of the organisation in the volatile business environment. Employee turnover have cost the organisation in terms of monetary loss as well as it has hampered organisation strategic objective. Previous studies have indicated the importance of studies on the factors determining the employee turnover intention. This paper brought the prime factors in one framework. The study was conducted to examin the role of employee embeddedness, employee engagement and job motivation to predict employee turnover intention. First the literature review was carried out to understand employee turnover intention and its determinants. Later in order to arrive at the theoretical framework, theory of planned behaviour was used to support dependent construct, employee turnover intention and employee engagement theory, theory of job embeddedness, self determination theory was used to support the independent construct for determining employee turnover intention. Lastly the four propostions was given in this study which can be further studied empirically. The employee embedded in their duties are satisfied with their job when their is positive motivation develop in the work environment . It is mandatory for employer to provide improved salary, training and career development opportunities for their employee to develop high degree of fit ie to achieve greater level of job embeddedness in the organisation. Highly engaged employee have higher degree of job embeddedness. Leadership acts a potential variable which govern the factors responsible for employee turnover intention, leader could act as a motivator to the employee and would be helpful in reducing employee turnover intention.

Further study is recommended to consider the study of (Okolocha & State, 2020) which states CSR does improve employer brand image and as well decrease turnover intention of employees. CSR could be taken as the mediating variable for employee turnover intention.

Note: Author of this study is exploring and empirically testing the latent variable mention in a framework for their further study.

REFERENCES

- [1] Ahmad, A. (2018). The relationship among job characteristics organizational commitment and employee turnover intentions. *Journal of Work –Applied Management*, 10(1), 74–92. <https://doi.org/10.1108/jwam-09-2017-0027>
- [2] Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- [3] Bashir, F., Nadeem, M., Bashir, F., & Nadeem, M. (2019). The Linkage Between Workplace Ostracism and Proactive Customer Service Performance in Pakistani Banking Industry: (A Conservation of Resource and Job Embeddedness Perspective) Email address : 0626(X). <https://doi.org/10.11648/j.XXXX.2019XXXX.XX>
- [4] Belias Dimitrios, K.A. (2004). Organizational culture and job satisfaction. *International Review of Management and Marketing*, 4(2), 132–149. <https://doi.org/10.1108/0885862031047313>
- [5] Chebet, W. V., Makomere, J., & Karei, R. (2019). Effect of Employee Engagement on Employee Turnover Intention in Hotels within Eldoret Town, Kenya. *The International Journal of Business & Management*, 7(11), 120–125. <https://doi.org/10.24940/theijbm/2019/v7/i11/bm1911-025>
- [6] Fitria Lia , Hariandi Bambang, R. (2017). Effect of job satisfaction and perception of work opportunities to turnover intention with organisation commitment as intervenining variable : the case of hotel in east java , Indonesia 8(68). <https://doi.org/https://doi.org/10.18551/rjoas.2017-08.20>
- [7] Gan, K.P., Lin, Y., & Wang, Q. (2020). Public Service Motivation and Turnover Intention: Testing the Mediating Effects of Job Attitudes. *Frontiers in Psychology*, 11(June), 1–14. <https://doi.org/10.3389/fpsyg.2020.01289>
- [8] Gautam, P. K. (2019). Comprehensive Reward System, Employee Motivation and Turnover Intention: Evidence from Nepali Banking Industry. *Quest Journal of Management and Social Sciences*, 1(2), 181–191. <https://doi.org/10.3126/qjmss.v1i2.27418>
- [9] Gupta, M., & Shaheen, M. (2017). Impact of work engagement on turnover intention: Moderation by psychological capital in India. *Business: Theory and Practice*, 18(1), 136–143. <https://doi.org/10.3846/btp.2017.014>
- [10] Gustomo, A., Febriansyah, H., Ginting, H., & Santoso, I.M. (2019). Understanding narrative effects: The impact of direct storytelling intervention on increasing employee engagement among the employees of state –owned enterprise in West Java, Indonesia. *Journal of Workplace Learning*, 31(2), 166–191. <https://doi.org/10.1108/JWL-07-2018-0088>
- [11] Holston Okae, B. (2018). The Effect of Employee Turnover in the Hospitality Industry: Quantitative Correlational Study. *International Journal of Learning and Development*, 8(1), 156. <https://doi.org/10.5296/ijld.v8i1.12513>
- [12] Hom, P.W., Lee, T.W., Shaw, J.D., & Hausknecht, J.P. (2017). One hundred years of employee turnover theory and research. *Journal of Applied Psychology*, 102(3), 530–545. <https://doi.org/10.1037/apl0000103>
- [13] Hussein Alkahtani, A. (2015). Investigating Factors that Influence Employees' Turnover Intention: A Review of Existing Empirical Works. *International Journal of Business and Management*, 10(12), 152. <https://doi.org/10.5539/ijbm.v10n12p152>
- [14] Kahn, W.A. (n.d.). Psychological Conditions of Personal Engagement and Disengagement at Work. *The Academy of Management Journal*, 33(4), 692–724. <https://doi.org/10.1021/la051212i>

- [15] Lee, M.C.C., Idris, M.A., & Tuckey, M. (2019). Supervisory coaching and performance feedback as mediators of the relationships between leadership styles, work engagement, and turnover intention. *Human Resource Development International*, 22(3), 257–282. <https://doi.org/10.1080/13678868.2018.1530170>
- [16] Lee, T.W., Hom, P., Eberly, M., & Li, J. (Jason). (2018). Managing employee retention and turnover with 21st century ideas. *Organizational Dynamics*, 47(2), 88–98. <https://doi.org/10.1016/j.orgdyn.2017.08.004>
- [17] Legault, L. (2020). Encyclopedia of Personality and Individual Differences. *Encyclopedia of Personality and Individual Differences*, October. <https://doi.org/10.1007/978-3-319-28099-8>
- [18] Mahan, T., Nelms, D., Bearden, C., & Pearce, B. (2019). Retention report. 1–40. [https://info.workinstitute.com/hubfs/2019 Retention Report/Work Institute 2019 Retention Report final-1.pdf](https://info.workinstitute.com/hubfs/2019%20Retention%20Report/Work%20Institute%202019%20Retention%20Report%20final-1.pdf)
- [19] Mallol, C.M., Holtom, B.C., & Lee, T.W. (2007). Job Embeddedness in a Culturally Diverse Environment. *Journal of Business and Psychology*, 22(1), 35–44. <https://doi.org/10.1007/s10869-007-9045-x>
- [20] Memon, M.A., Salleh, R., & Baharom, M.N.R. (2015). Linking person–job fit, person organization fit, employee engagement and turnover intention: A three–step conceptual model. *Asian Social Science*, 11(2), 313–320. <https://doi.org/10.5539/ass.v11n2p313>
- [21] Miao, S., Rhee, J., & Jun, I. (2020). How much does extrinsic motivation or intrinsic motivation affect job engagement or turnover intention? A comparison study in China. *Sustainability (Switzerland)*, 12(9). <https://doi.org/10.3390/su12093630>
- [22] Mitchell, T.R., Holtom, B.C., Lee, T.W., Sablinski, C.J., & Erez, M. (2001). Why people stay: Using job embeddedness to predict voluntary turnover. *Academy of Management Journal*, 44(6), 1102–1121. <https://doi.org/10.2307/3069391>
- [23] Ngo –Henha, P. (2017). A review of existing turnover intention theories. *International Journal of Economics and Management Engineering*, 11(3), 2760–2767.
- [24] Okolocha, C.B., & State, A. (2020). Influence of Employee –Focused Corporate Social Responsibility and Employer Brand on Turnover Intention. *European Journal of Business and Management*, 12(9), 53–61. <https://doi.org/10.7176/ejbm/12-9-07>
- [25] Parker, S.K., Bindl, U.K., & Strauss, K. (2010). Making things happen: A model of proactive motivation. *Journal of Management*, 36(4), 827–856. <https://doi.org/10.1177/0149206310363732>
- [26] Qian, S., Yuan, Q., Niu, W., & Liu, Z. (2019). Is job insecurity always bad? The moderating role of job embeddedness in the relationship between job insecurity and job performance. *Journal of Management and Organization*, 2019. <https://doi.org/10.1017/jmo.2018.77>
- [27] Schaufeli, W.B., & Bakker, A.B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi–sample study. *Journal of Organizational Behavior*, 25(3), 293–315. <https://doi.org/10.1002/job.248>
- [28] Shibiti, R. (2019). Satisfaction with retention factors in relation to job embeddedness of public school teachers. *SA Journal of Human Resource Management*, 17(2015), 1–9. <https://doi.org/10.4102/sajhrm.v17i0.1161>

- [29] Shweta Jha. (2009). Determinants of employee turnover intention. *Management Today*, 9(3), 26–33. <https://doi.org/10.1108/ccij-11-2016-0074>
- [30] Skelton, A.R., Nattress, D., & Dwyer, R. J. (2019). Predicting manufacturing employee turnover intentions. *Journal of Economics, Finance and Administrative Science*, 25(49), 101–117. <https://doi.org/10.1108/JEFAS-07-2018-0069>
- [31] Sow, M., Anthony, P., & Berete, M. (2016). *Normative Organizational Commitment and its Effects on Employee Retention*. *Business and Economic Research*, 6(1), 137. <https://doi.org/10.5296/ber.v6i1.9018>
- [32] Takawira, N., Coetzee, M., & Schreuder, D. (2014). Job embeddedness, work engagement and turnover intention of staff in a higher education institution: An exploratory study. *SA Journal of Human Resource Management*, 14(1), 1–10. <https://doi.org/10.4102/sajhrm.v12i1.524>
- [33] Tarjo, T., Suwito, A., Aprillia, I.D., & Ramadan, G.R. (2019). Theory of planned behavior and whistleblowing intention. *Jurnal Keuangan Dan Perbankan*, 23(1), 45–60. <https://doi.org/10.26905/jkdp.v23i1.2714>
- [34] Tri Wiliyanto, I., Sudiarditha, I.K., & Yohana, C. (2020). Influence of Work Environment Toward Turnover Intention with Motivation and Job Satisfaction as Intervening Variables in PT. TSA. *International Journal on Advanced Science, Education, and Religion*, 3(1), 11–21. <https://doi.org/10.33648/ijoaser.v3i1.42>
- [35] Vermooten, N., Boonzaier, B., & Kidd, M. (2019). Job crafting, proactive personality and meaningful work: Implications for employee engagement and turnover intention. *SA Journal of Industrial Psychology*, 45, 1–13. <https://doi.org/10.4102/sajip.v45i0.1567>
- [36] Yang, J., Pu, B., & Guan, Z. (2019). Entrepreneurial leadership and turnover intention in startups: Mediating roles of employees' job embeddedness, job satisfaction and affective commitment. *Sustainability* (Switzerland), 11(4). <https://doi.org/10.3390/su11041101>

24

How A Customer Select A Logistics Service Provider

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Abstract: Logistics play an important in the development of a country. Logistics involves mainly 64 percentage transportation and 24 percentage warehousing. The current paper focuses on the various methods for calculating the cost of logistics, and the optimization concepts involved are being discussed. Interview of three service providers and three customers with different backgrounds is being taken and discussed. Grounded theory based on the interview is formed, and parameters that affect the selection and cost of logistics are being concluded.

INTRODUCTION

“Logistics is a comprehensive industry, which involves transportation, packaging, storage, loading, unloading, handling, distribution process, distribution and information, and so on” (Zhao TangZhao Tang, 2009) The Importance of logistics can be considered by looking at percentage share in the G.D.P. of a particular country. In developing countries like China, the logistics are near about one-third of its G.D.P. (Ji .Ji, 2018). The major transportation of the country includes Rail, water, air, road, pipeline. The cost includes Machinery cost, operating cost, Labour cost, Fuel cost (Delivand, Barz GheewalaDelivand, 2011). The various sources are being discussed in Table1. It also explains the publishers and the journal details. The method part is also described. As from the figure it is clear that the transportation cost includes 64% and which includes 36% Road transport, 19% Rail transport, 5% water transport, 1% Air transport. 24% of consists of warehousing (Chandra, P., & Jain, N, 2007)

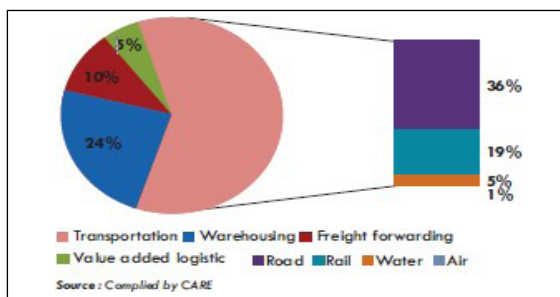


Fig. 1

Source: Compiled by CARE

METHODOLOGY

STEPS FOLLOWED FOR REVIEWING THE LITERATURE

I have adopted five steps to do this literature review. These are

Step 1: The range of our investigation is 30 years, from 1990 to 2020. The starting paper is from 1994, and the latest Paper is from 2018 Year.

Step 2: The articles were taken from a prominent database from the library page of IIMV. A database like science Direct, Emerald, Springer, Taylor, and Francis

Step 3: The works \Logistics” and \cost” were searched in the search bar of the above database.

Step 4: All the relevant papers are analyzed in Ms. Excel by making a table.

Step 5: The important findings like Focus objectives, the method adopted, Type of Paper, No. of citation, Author, and Year is inserted in Excel to find the research gaps and analysis purpose.

RESEARCH METHODS REVIEW DISCUSSION

Various research methods are used in different paper like survey, case study, conceptual, mathematical, interviews, simulations. Some researchers also used combination of two or methods to arrive at a particular conclusion.

Let us now analyze the data accumulated by us in Table 1.

Table 1: Overview of Papers used for the Review

S. No	Title	Authors (years)	Focus & Objective	Methodology
1	Analysis and Strategy of the Chinese Logistics Cost Reduction	Xiaofeng Zhao & Qi Tang (2009)	Effective Strategy to reduce logistics cost	Proposed Standardization concept through Govt. collaboration
2	Logistics and Supply Chain Management: Strategies for Reducing Cost and Improving Service	Martin Christopher (2007)	Administrative strategy is defined	Interview method is used
3	Logistics Trends in South Africa	Willem W. Colliers and Pieter J.A. Nagel (1994)	Factors that have influenced Logistics growth in 1992 in South Africa	Done Exploratory study. A sample of 33 key people from the logistics industry was drawn and asked to evaluate the status of logistics
4	Cost modeling in logistics using time-driven A.B.C.	Patricia Everard and Werner Bruggeman (2006)	The Experiences of a wholesaler with time-driven activity based costing (TDABC)	The case study research was performed at a Belgian wholesaler. Interviews were conducted. The cost and activity database was analyzed

Table 1 (Contd.)...

...Table 1 (Contd.)

5	Logistics Cost analysis of rice straw for biomass power generation in Thailand	Mitra kami Mirko Barz (2011)	Compare logistics cost with the cost of energy production by burning rice straw	A Spreadsheet Model has been developed for an exemplary virtual rice straw combustion plant in three regions of Thailand
6	Reverse Logistics as a Means of Reducing the Cost of Quality	E. D. FASSOULA (2007)	To determine the cost of Quality on reverse logistics	The Methodology used for the development of the diagnostic tool
7	The total cost of logistics in supplier selection, under conditions of multiple sourcing, multiple criteria and capacity constraint	S.H. Ghodspour C. O'Brien (2001)	Described a nonlinear integer programming model that has been developed to help managers in this decision making.	Formulating a single objective model
8	The Private and social cost efficiency of port hinterland container distribution through a regional logistics system.	Fedele Iannone(2011)	How to optimize cost between different ports)	Used a network programming tool "Interpore Model."
9	Logistics scheduling to minimize the sum of total weighted inventory cost and transport cost	Min ji, Fang, Wenya Zhang (2018)	Explained the concept of three stage supply chain, batching, scheduling, optimizing transportation and inventory cost	Different algorithms are used to optimize the cost of logistics
10	Integration of logistics and cloud computing service providers: Cost and green benefits in the Chinese context	Nachiappan Subramanian, Muhammad D. Abdulrahman (2014)	Explained the concept of cloud computing (cc) in the development of small and medium-size logistics service providers(SMLSPS)	Drawing on the innovation diffusion theory and data from 236 Chinese small and medium-sized logistics service providers.

In the first research paper, "Analysis and strategy of the Chinese Logistics cost reduction" The author (Zhao Tang Zhao Tang, 2009) explained the effective strategy To reduce the cost of logistics. The strategies include Macro and Microtrends Which affects the cost of logistics. The macro influencing factors include Government regulation and facilities provided by the govt, for the promotion of logistics growth. Infrastructure also provides a very important role in the cost of logistics. The Influencing factor of Micro logistics cost is Enterprises, lack of standardization, etc.

The second Book Review, "Logistics and supply chain management: strategies for reducing cost and improving services" (ChristopherChristopher, 1999) It is a book review that explains the theory about the parameters which affect The cost. The publisher is a pitman publishing London.

The third research paper, "Logistics Trend in South Africa" (Jacobs, Pienaar BotesJacobs, 2006) This Paper is published by Emerald Insight. This Paper explains the factors that have affected the logistics badly in South Africa in 1992 due to a fall in G.D.P. In this paper author done an exploratory study. He has collected a sample of 33 key people from the logistics industry. The surveyors include Academicians, consultants, practitioners, service providers. If we compare the position of South Africa in supply chain excellence and Individual company's logistical excellence, then it is low in both cases.

The fourth Case study includes, “Cost Modelling in logistics using time-driven” (PengPeng, 2012). In this case, the study authors explain the experiences the A wholesaler with time-driven activity-based costing (TDABC). This author used the Interview approach, and the cost and activity database was analysed. The whole seller initially shifted from volume-based cost systems to A.B.C. In the A.B.C. approach, firstly, different overhead activities are identified. Then assign an overhead cost to the different activities resource driver. Then activity driver for each activity is identified. Then activity driver rate is identified. Then finally multiplied the activity driver rate by the activity driver consumption to trace the cost of orders.

In the fifth research paper, “Logistics cost analysis of rice straw for biomass power generation in Thailand” (Delivand, Barz GheewalaDelivand, 2011) In this author compared the logistics cost with the cost of energy production by burning rice straw. Here spreadsheet Model has been developed for an exemplary visual rice straw combustion plant in three regions of Thailand. The cost includes Machinery cost, operating cost, labor cost, fuel cost.

The sixth research paper, “Reverse logistics as a means of reducing the cost Of Quality” (FassoulaFassoula, 2005). In this Paper, the author determines the cost of Quality on reverse logistics. The Methodology used for the development of the Diagnostic tool. Cost of quality includes Prevention cost, Appraisal costs, Internal failure cost, external failure cost. A reverse movement in reverse logistics can start from either when product or services reached the end-users life or due to quality problem that occurs. The diagnostic tool is a matrix- structured, indicating interface between the process that reverse logistics or internal logistics management address and quality management activities that actually take place in a particular organization.

In the seventh research paper, “The total cost of logistics in supplier selection, Under conditions of multiple sourcing, multiple criteria, and capacity constraint.” (Ghodsypour O’BrienGhodsypour O’Brien, 2001) The author described a nonlinear integer programming model that has been developed to help managers in this decision making. A single objective model is being formulated. The variable like annual demand (D), ordered quantity to all suppliers(Q), length of each period(I), Inventory holding cost rate(r), number of the supplier(n) are used to formulate a model.

In eighth Paper, “The private and social cost efficiency of port hinterland container distribution through a regional logistics system” (IannoneIannone, 2012). In this research paper the between two parts is optimized. These ports are taken from a certain location in Italy. Used networking program model “Interport model”.

In the Ninth research paper, “Logistics Scheduling to minimize the sum of total weighted inventory cost and transport cost” (Ji .Ji , 2018) The author explains the three-stage supply chain, batching, scheduling, weighted inventory cost, transportation cost. Different algorithms are used to optimize the cost of logistics. Batch size plays an acritical role in deciding the cost of total inventory being explained.

In the tenth research paper, “Integration of logistics and cloud computing service Providers: cost and green benefits in the Chinese context” (Subramanian, Abdulrahman ZhouSubramanian, 2014). The author explained the concept of cloud computing (cc)

in the development of small and medium-sized logistics service providers (SMLSPS). Interestingly here, we use innovation diffusion theory and data from 236 Chinese small and medium-sized logistics service providers. Need benefit concept conceptual model move around perceived cost benefits of CC, Perceived Need for CC adoption, Perceived Green benefits of CC.

INTERVIEW ANALYSIS

Interview of Three customers and three Logistics service providers is done to get an idea about what parameters a customer looks for while selecting a particular logistics provider and Also what parameters a logistics service provider keeps in mind when he quote a particular price.

INTERVIEW WITH CUSTOMERS

Customer 1

Que 1: What is your Name. What is Your age, and what is your occupation?

Ans: My Name Shivam Updhyay. I am 26 years old. I am Clerk at S.B.I. Bank Jabalpur.

Que 2: How you choose a logistics service provider. What parameters you keep in mind.

Ans: I generally use Small transportation vehicles like Chota Hathi or Mahindra pickup to transport my household things from one place to another. I don't go for insurance of things. I just search on the internet and find local logistics service providers, talk to two or three of them, and select one with the lowest price quote.

Customer 2

Que 1: What is your Name. What is Your age, and what is your occupation?

Ans: My Name is Rakesh Choubey. My age is 37 Years old. I am an (S.D.O) Govt. An employee in the Irrigation Department of Jabalpur zone of Madhya Pradesh.

Que 2: How you choose a logistics service provider. What parameters you keep in mind.

Ans: Every Year 3 to 4 years I have to move to another city, and I generally hire a 407 truck of 14 feet of 3.5-ton capacity. Since the material is important, I do insurance of material. The material includes important Govt. Files and my personal household things like T.V., Fridge, Bad, Furniture, etc.

Customer 3

Que1: What is your Name. What is Your age, and what is your occupation?

Ans: My name is Bashir Khan. I am a wholesaler of Materials used by local Kirana stores in Jabalpur.

Que 2: How you choose a logistics service provider. What parameters you keep in mind.

Ans: I normally prefer 14 wheeler 30 Ton capacity truck to transport my Material from Nagpur to Jabalpur. The truck generally charges me price according to volume and weight of Material since the service provider in one trip transfers Material of various whole sellers simultaneously.

INTERVIEW WITH LOGISTICS SERVICE PROVIDER

Service Provider 1

Que 1: What is the name of your logistics company. From how many years you are running this business. Which type of vehicle you use for transportation.

Ans: My company Name is Sairam Transport limited. I am running 8 Mahindra pickup for last five years.

Que 2: How You quote the price to customers. What parameters you keep in your mind.

Ans: I Generally receive round trip. The Quoted price is three times the cost of fuel involved in the trip. The condition of the road should be good. Otherwise, the price will get increased accordingly. This 3 times fuel cost is only if the work is completed in a single day. Loading and unloading is done by the customer only. If any kind of toll tax is there, then its cost will be given by the customer only.

Service Provider 2

Que 1: What is the name of your logistics company. From how many years you are running this business. Which type of vehicle you use for transportation.

Ans: My company Name is Mahakal Transport Ltd. I am running 5 Trucks of 3.5 capacity for last 10 years.

Que 2: How You quote a price to customers. What parameters you keep in your mind.

Ans: I generally receive one bay trip. The fuel cost of one bay trip is near about 17% of the round trip. I generally Quote double of fuel cost of a single trip. This thing I do since in the return trip my driver waits for 1 to 2 days to get a return deal of the same path by another service provider. Loading and unloading cost, toll cost, packaging cost is given by the customer.

Service Provider3

Que1: What is the name of your logistics company. From how many years you are running this business. Which type of vehicle you use for transportation.

Ans: My company name is Narmada Transport Ltd. I have a fleet of 15 trucks of 14 wheeler each of 25-ton capacity. I am running this transport company the last 20 years.

Que 2: How You quote a price to customers. What parameters you keep in your mind.

Ans: Loading and unloading cost, toll cost, packaging cost is given by me I Quote price According to the weight and volume of the Material which is demanded by the whole seller. I a single trip, the materials of 3 to 4 vendors of the same city is being transferred.

GROUNDNED THEORY FOR CUSTOMERS

Looking at keywords from a survey of customers, we come to know that different kinds of customers need different kinds of logistics service providers. Our first customer, who was a clerk in the bank, don't care for insurance and mainly focus on the cost optimization parameter. He did not spend much on the safety and security of his Material to be transferred. Our second customer, who was an S.D.O (Govt. employee) with high income, spent more on the safety and security of the Material to be transported. He generally takes insurance and takes the help of Persons for packaging and loading and unloading. The third type of customer who is the whole seller prefers Material to be transported in big sized trucks where loading and unloading and toll charges are provided by the logistics service provider.

GROUNDNED THEORY FOR LOGISTICS SERVICE PROVIDERS

When we go through a survey of logistics service providers, we find that logistics service providers also have some constraints before they quote a price to customers. The first logistics provider provides a price that is three times the fuel cost since he is providing round trip service. The Loading, unloading, packaging, toll cost is provided by the customer separately. The second logistics provider Provide price, which is 2 times the fuel cost incurred in a single trip. Since in return, the service provider has to wait for the next load in his return trip. The third logistics provider provides the price according to the wholesaler's weight and volume to be transported. Loading, unloading, toll, packaging cost is incurred by the logistics service provider.

CONCLUSION

Already various methods of simulations, survey, interview, Variable finding, and fitting the relationship between the variables is used to firstly done the qualitative data analysis, then quantitative data analysis. Cost parameters depend on other parameters like Govt. regulations, road conditions, competition, availability of effective infrastructure like technology incorporation, availability of particular storage facilities, and the importance of batch size and schedule played a role in cost finding optimizing. After analyzing the

interview, we come to the conclusion that different customers have a different kind of logistics supplier need. Some want more security and facility while some others want cost reduction. The need for the whole seller is also of the part load. Logistics service providers also get divided into some groups to provide the different needs of customers. Some focus on a round trip, some on a single trip with double fuel costs and some with part load with a collaboration with different wholesalers.

REFERENCES

- [1] Christopher, M. (1999). Logistics and Supply Chain Management: Strategies for Reducing Cost and Improving Service *Financial Times*. Pitman Publishing. London, 1998 ISBN 0 273 63049 0 (hardback) 294+ 1× pp.
- [2] Delivand, M.K., Barz, M., & Gheewala, S.H. (2011). Logistics cost analysis of rice straw for biomass power generation in Thailand. *Energy*, 36(3), 1435 –1441.
- [3] Ghodsypour, S.H., & O'brien, C. (2001). The total cost of logistics in supplier selection, under conditions of multiple sourcing, multiple criteria and capacity constraint. *International Journal of Production Economics*, 73(1), 15 –27.
- [4] Iannone, F. (2012). The private and social cost efficiency of port hinterland container distribution through a regional logistics system. *Transportation Research Part A: Policy and Practice*, 46(9), 1424 –1448.
- [5] Jacobs, CG., Pienaar, W.J., & Botes, F.J. (2006). A model to calculate the cost of logistics at a macro level: a case study of South Africa. *Southern African Business Review*, 10(3), 118.
- [6] Ji, M., Fang, J., Zhang, W., Liao, L., Cheng, T.C.E., & Tan, Y. (2018). Logistics scheduling to minimize the sum of total weighted inventory cost and transport cost. *Computers & Industrial Engineering*, 120, 206 –215.
- [7] Peng, J. (2012). Selection of logistics outsourcing service suppliers based on AHP. *Energy Procedia*, 17, 595 –601.
- [8] Subramanian, N., Abdulrahman, M.D., & Zhou, X. (2014). Integration of logistics and cloud computing service providers: Cost and green benefits in the Chinese context. *Transportation Research Part E: Logistics and Transportation Review*, 70, 86 –98.
- [9] Zhao, X., & Tang, Q. (2009). Analysis and strategy of the Chinese logistics cost reduction. *International Journal of Business and Management*, 4(4), 188 –191.
- [10] Chandra, P., & Jain, N. (2007). The logistics sector in India: Overview and challenges. *World Scientific Series on 21st Century Business*, 105.
- [11] Karrapan, C., Sishange, M., Swanepoel, E., & Kilbourn, P. J. (2017). Benchmarking criteria for evaluating third –party logistics providers in South Africa. *Journal of Transport and Supply Chain Management*, 11(1), 1 –10.
- [12] Pratap, D., Gupta, D.B., & Pohit, S. (2020). *Quantifying Macro Logistics Cost of India*.
- [13] Pohit, S., Gupta, D.B., Pratap, D., & Malik, S. (2019). Survey of Literature on Measuring Logistics Cost: A Developing Country's Perspective. *Journal of Asian Economic Integration*, 1(2), 260 –282.
- [14] Mitra, S., & Bagchi, P.K. (2008, January). Key success factors, performance metrics, and globalization issues in the third –party logistics (3PL) industry: A survey of North American service providers. In *Supply Chain Forum: An International Journal* (Vol. 9, No. 1, pp. 4254). Taylor & Francis.
- [15] Juan, A.A., Mendez, C.A., Faulin, J., De Armas, J., & Grasman, S.E. (2016). Electric vehicles in logistics and transportation: A survey on emerging environmental, strategic, and operational challenges. *Energies*, 9(2), 86.

- [16] Zhang, G.Q., L.I.U., L.Q., & Zhang, X.P. (2008). Survey on the Control about Business Logistics Cost [J]. *Ecological Economy*, 5.
- [17] Jack, E. P., Powers, T. L., & Skinner, L. (2010). Reverse logistics capabilities: antecedents and cost savings. *International Journal of Physical Distribution & Logistics Management*.
- [18] Sbihi, A., & Eglese, R.W. (2007). *The Relationship between Vehicle Routing and Scheduling and Green Logistics –A Literature Survey*.
- [19] Zhang, Z., & Figliozzi, M.A. (2010). A survey of China's logistics industry and the impacts of transport delays on importers and exporters. *Transport Reviews*, 30(2), 179 –194.
- [20] Larson, P.D., & Gammelgaard, B. (2001). The logistics triad: survey and case study results. *Transportation Journal*, 71 –82.
- [21] Ho, G.T.S., Choy, K.L., Lam, C.H.Y., & Wong, D.W. (2012). Factors influencing implementation of reverse logistics: a survey among Hong Kong businesses. *Measuring Business Excellence*.
- [22] Rantasila, K., & Ojala, L. (2015). National –level logistics costs: An overview of extant research. *International Journal of Logistics Research and Applications*, 18(4), 313 –324.
- [23] Razzaque, M.A., & Sheng, C.C. (1998). Outsourcing of logistics functions: a literature survey. *International Journal of Physical Distribution & Logistics Management*.
- [24] Zhang, A., Luo, W., Shi, Y., Chia, S.T., & Sim, Z.H.X. (2016). Lean and Six Sigma in logistics: a pilot survey study in Singapore. *International Journal of Operations & Production Management*.
- [25] Jaafar, H. S., & Rafiq, M. (2005). Logistics outsourcing practices in the U.K.: a survey. *International Journal of Logistics: Research and Applications*, 8(4), 299 –312.
- [26] Basso, F., D'Amours, S., Rönnqvist, M., & Weintraub, A. (2019). A survey on obstacles and difficulties of practical implementation of horizontal collaboration in logistics. *International Transactions in Operational Research*, 26(3), 775 –793.
- [27] Lieb, R., & Bentz, B.A. (2005). The use of third –party logistics services by large American manufacturers: the 2004 survey. *Transportation Journal*, 5 –15.
- [28] Chan, F.T., & Chan, H.K. (2008). A survey on reverse logistics system of mobile phone industry in Hong Kong. *Management Decision*.
- [29] Uyanik, C., Tuzkaya, G., & Oğuztımur, S. (2018). A literature survey on logistics centers' location selection problem. *Sigma: Journal of Engineering & Natural Sciences/Mühendislik ve Fen Bilimleri Dergisi*, 36(1).
- [30] Larson, P.D., & Halldorsson, A. (2004). Logistics versus supply chain management: an international survey. *International Journal of Logistics: Research and Applications*, 7(1), 1731.
- [31] Gurung, A. (2006). A survey of information technologies in logistics management. In *Proceedings of the Decision Sciences Institute*.
- [32] Havenga, J., & Simpson, Z. (2014). Reducing national freight logistics costs risk in a highoil –price environment. *The International Journal of Logistics Management*.
- [33] Larson, P.D., & Gammelgaard, B. (2001). Logistics in Denmark: a survey of the industry. *International Journal of Logistics*, 4(2), 191 –206.

Analysing the Determinants of Faculty Engagement in Higher Education Institutions

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Abstract: The engagement of faculty is considered to have an enormous effect on the success of the student and the overall development of the society. The aim of the study is to determine the factors which influence the engagement of faculty members in higher educational institutions. In consonance with this aim, a cross-sectional survey design was adopted which was administered to a sample of 360 faculties employed in higher educational institutions of Himachal Pradesh, India. The factors were identified and analysed using Factor analysis and multiple linear regression technique. Based on the outcome of the analysis, four factors were extracted, namely: Institutional Support, Institutional Orientation for Results, Supervisory Support and Teacher Self-Efficacy.

Keywords: Faculty Engagement, Institutional Support, Institutional Orientation for Results, Supervisory Support and Teacher Self-Efficacy

INTRODUCTION

Success stories of prospering institutions have been scripted on efforts made by their engaged employees. Employee engagement is the willingness of the employees to go the extra mile, believe in the institution and what it stands for in an effort to help their institution to succeed. Engaged workers are occupied in, passionate about and committed to their jobs (Bakker, 2011). William A. Kahn (1990) who is considered as the founding father of employee engagement movement defines it as “*harnessing of organization members’ selves to their work roles; in engagement people employee and express themselves physically, cognitively and emotionally during role performances*”. By this Kahn implied that an employee has to be present both physically and psychologically while performing their job role in the organization. Employee engagement is the attachment employee feel towards their work that results in higher levels of performance, commitment and loyalty (Patro, 2013). Engaged employees are good performers and are willing to go the extra mile. They are creative problem solvers and possess an intrinsic interest and dedication towards work. Engaged employees develop a positive team climate,

irrespective of the job demands faced and resources available to them. On the other hand, disengaged employees do not care about organizational growth, nor do they support a good work culture. They lack enthusiasm and too are busy complaining, making excuses or gossiping. Hence, they do not invest in themselves to become better people and grow within the company.

Employee engagement is majorly explored area in the corporate world while in the educational sector, it has limited studies (Robinson *et al.*, 2004). Institutions with engaged staff tend to have higher employee wellbeing, and lower turnover and sickness absence. Particularly higher education institutions, having engaged and motivated staff was seen as crucial in delivering high quality teaching and learning (Hagner and Schneebeck, 2000). Teachers helps in building the student character and a responsible society. Therefore, teacher's problems should be listened and addressed by every higher education intuition. And it can only be resolved by continuously surveying the faculty member's opinions. Higher education institutions must be able to measure and track engagement, compare this information with historical data, and determine what actions should be taken to improve engagement. According to the Cornerstone OnDemand and Ellucian report 47.1 percent of institutions do not measure and track engagement levels. Those that do are using tools such as engagement surveys (29 percent), employee reviews (27 percent), student surveys (16 percent) and employee retention data (15.3 percent).

India's higher education system ranks third to China and USA in terms of number of students enrolled according to the World Bank. India, being a nation popular for its education since ages, and which has several educational institutions rendering courses in various disciplines, has never covered this construct. In Indian context, the number of such studies is really scanty. According to statistics of The Quacquarelli Symonds (QS) World University Rankings for the year 2019 reported that only three Indian Universities could feature in the list of world's top 200 Universities. One of the key factors driving the quality of education is teacher's emotional and intellectual engagement in their work. The construct of Faculty engagement is in its infancy stage and on global level researchers are trying to explore the literature on the level of faculty engagement and factors affecting it, as well as the empirical relationships among the constructs related to engagement like organizational commitment and job performance etc. Limited published doctoral work is conducted in this field. With this gap and significance in the field of academia developed a need and became the base for selection this research topic.

PROBLEM STATEMENT

Higher education is encountering enormous hurdles. It has become a challenge to keep staff engaged, motivated and committed. Cornerstone and Ellucian's in 2016 conducted a survey titled "*Employee Engagement and Retention in Higher Education survey*" concluded that 39% of colleges and universities does not offer any type of employee

engagement opportunities such as leadership development, coaching, recognition programs, approximately half of the participants said that employee engagement is neither tracked nor measured in their institutions. Due to these reasons student's development and organizational growth gets hampered. To overcome this challenge every institution must continuously investigate and explore institution specific factors of faculty engagement.

OBJECTIVES OF THE STUDY

The present study was undertaken to determine and analyse various factors influencing engagement amongst faculty members working Higher Educations Institutions.

REVIEW OF LITERATURE

Factors that affect engagement are diverse. While they some that depend on the prevailing culture within an institution, there are also common threads for all individuals, and also individual factors that can significantly influence a person's relationship with colleagues and their organisation.

Table 1: Factors Influencing Employee Engagement Identified by Various Researchers

S. No.	Researcher	Year	Factors
1	Kahn	1990	Psychological conditions (meaningfulness, safety and availability).
2	Luthans and Peterson	2002	Mangers self-efficacy.
3	Robinson <i>et al.</i>	2004	Leadership, relationships at work, total reward, recognition, work life balance and work itself that leads to the engagement of the employees.
4	Alan M. Saks	2006	Job characteristics, organization and supervisor support, reward and recognition and lastly procedural justice
5	Xanthopoulou <i>et al.</i>	2007	Personal resources like employee self-efficacy and optimism.
6	Peacock	2008	Social events, bonus, Job security, Flexible working hours.
	Maria	2008	Organizational support and Growth opportunities
7	Ruyle	2009	Strategic Alignment, Trust in Senior Leadership, Immediate Manager Working Relationship, Peer Culture, Personal, Nature of my Career, Career Support, Nature of the job, Development Opportunities, Employee Recognition and Pay Fairness.
8	Bakker	2010	Protection of workers psychological health and safety
9	Jyotsna Bhatnagar	2010	Sense of justice and psychological contract
10	Barman and Ray	2011	Institutional attachment, Primary involvement, Secondary involvement, Recognition and networking, Career orientation and guidance and Credibility
11	Tom Newcombe	2013	Clarity of role, setting performance expectations and regular appraisals
12	Duane Bray	2015	Permission to play, tailored purpose, social contract, bottom-up innovation.
13	Chandani	2016	Strong induction programs, rigorous training and development programme, certification programme and giving them a realistic job preview
14	Oluwole A. Shokunbi	2016	Passion for the job, availability of materials for the job, work environment, relationship and support between employees, training and retraining, and pay and remuneration
15	Myung	2017	Supervisory Support, Perceived Organizational Support, and Learning Opportunities
16	T. Suhasini	2018	Family friendliness, Employee opinion, Transparency, Health and Safety, Emotional and Personal factors.

Source: Author's compilation from various literatures

For effective faculty engagement, every institution must periodically review the factors contributing in engaging its workforce.

RESEARCH METHODOLOGY

The present study was descriptive in nature implying natural observation of the characteristics of the research subject without influencing the variables. It is a cross sectional design where a sample is taken from the population at one point of time. Study consists of faculty members working in higher educational institutions of Himachal Pradesh, India. Higher Education Institutions namely universities and colleges can be broadly categorized into two types namely the government institutions which are and the private institutions. Multi-stage sampling method was used for the choosing the final respondents. Data was collected by a well-structured questionnaire which were distributed to 400 faculties. Out of which only 360 questionnaires were returned (yielding response rate of 72%) and utilized for analysis of the study. Factor analysis was applied for extraction of different factors of faculty engagement and further to examine the influence of each factor on faculty engagement multiple linear regression was applied.

RESEARCH INSTRUMENTS

To identify the various factors influencing employee engagement four factors were included in the scale developed by Sunaina Ahuja (2015) and Ralf Schwarzer, Gerdamarie S. Schmitz, & Gary T. Daytner (1999). To quantify teacher self-efficacy, four major areas were recognised: (a) job accomplishment, (b) skill development on the job, (c) social interaction with students, parents, and colleagues, and (d) coping with job stress. In every area a teacher may hold different self-efficacy expectations. These major areas appear to be of vital importance for successful teaching.

A 42-item scale was used that explored the respondent's perception regarding self, current job and current organization. There was a mix of positive and negatively worded statements. Respondents were asked to express their level of agreement or disagreement for each statement on a five -point Likert scale ranging from 1 representing "strongly disagree" to 5 representing "strongly agree". The scale was found to be a reliable measure of employee engagement of faculty members in the higher education area of Himachal Pradesh, India as Cranach's alpha was computed as 0.91 for Institutional Support, 0.80 for Institutional Orientation for Results, 0.90 for Supervisory Support and 0.89 for Teacher Self-Efficacy which is above the acceptable limit of 0.70 (Hair *et al.*, 2009).

RESULTS AND DISCUSSIONS

DEMOGRAPHIC PROFILE OF THE FACULTY MEMBERS IN HIGHER EDUCATIONAL INSTITUTIONS OF HIMACHAL PRADESH, INDIA

Following Table 2 summarises the demographic profile of faculty members under study with percentages, mean and standard deviation.

Table 2: Summary of Demographic Profile of Faculty Members under Study

S. No.	Demographic Variable	Number of Respondents	Percentage	Mean	Standard Deviation
1	Type of Institution				
	Government	117	32.50	39.21	10.48
	Private	243	67.50	38.91	10.69
	Divorced	6	1.67	35.50	11.50
2	Working in Native Place				
	Native Place	302	83.89	38.75	11.07
	Other than Native Place	58	16.11	36.93	7.47
3	District				
	Kangra	131	36.39	37.65	11.02
	Shimla	119	33.06	37.25	9.12
	Solan	110	30.56	38.12	6.12
4	Designation				
	Professor	65	18.06	37.72	11.92
	Associate Professor	49	13.61	38.98	10.31
	Assistant Professor	246	68.33	38.55	10.65
5	Total Work Experience				
	Upto 5 years	111	30.83	40.93	7.61
	5 to 10 years	100	27.78	38.07	12.36
	10 to 15 years	58	16.11	39.09	10.95
	15 to 20 years	50	13.89	38.34	12.91
	More than 20 years	41	11.39	39.51	7.66
6	Work Experience in Present Institution				
	Upto 5 years	161	44.72	40.08	10.32
	5 to 10 years	121	33.61	39.20	11.13
	10 to 15 years	39	10.83	39.00	10.36
	15 to 20 years	39	10.83	38.15	11.82
	More than 20 years	0	0.00	0.00	0.00
7	Salary				
	Upto Rs. 30,000	128	35.56	38.81	8.61
	Rs. 30,001 to 50,000	93	25.83	37.86	8.92
	Rs. 50,001 to 70,000	49	13.61	38.37	8.63
	Rs. 70,001 to 90,000	18	5.00	40.83	8.97
	Rs. 90,001 to 1,10,000	36	10.00	37.00	9.06
8	Age				
	Up to 25 years	13	3.61	37.31	5.36
	25 to 35 years	172	47.78	39.08	10.98
	35 to 45 years	95	26.39	40.11	6.04
	45 to 55 years	61	16.94	38.25	12.09
	More than 55 years	19	5.28	39.63	9.91
9	Gender				
	Male	227	63.06	38.64	11.47
	Female	133	36.94	39.86	10.74
10	Marital Staus				
	Married	240	66.67	38.86	10.06
	Unmarried	114	31.67	37.77	11.61
11	Educational Qualification				
	Graduate	7	1.94	39.06	10.77
	Postgraduate	124	34.44	40.29	5.88
	M. Phil	23	6.39	38.48	14.74
	Doctorate	179	49.72	40.78	5.89
	Post Doctorate	27	7.50	39.78	10.14

Source: Primary data

DETERMINING THE FACTORS INFLUENCING FACULTY ENGAGEMENT

To fulfil the objective of the study, faculty members were asked to indicate and specify their level of agreement and disagreement towards various statements related to the parameters affecting their engagement level.

To analyze the data present study employed Factor analysis to identify those factors that have major influence on the engagement levels of faculty members. Factor analysis was performed to reduce the number of large variables in terms of relatively few new categories. These new categories are termed as factors, which also indicate the percentage of variance explained. Result shows that the total variance explained are 52.226%. This is appropriate for factor analysis. The 52.226% variance was explained by the 4 extracted components. The results are presented in table 3 mentioned below:

Table 3: Extraction, Loadings and Labelling of Faculty Engagement Factors

Factor Name		Items	Loading	Cronbach's alpha
Institutional Support	Opportunities for professional development and career growth	The institution provides good opportunities for career advancement	0.695	0.80
		The institution provides facilities for employee training and development	0.621	
		The institution regularly gives me opportunities to attend conferences, seminars and Faculty Development programs.	0.721	
		Ever since I have joined this institution there is continuous upgradation in my knowledge and skills.	0.698	
	Respect and Recognition	My opinions matter in the institution	0.715	
		Three years ahead I visualize myself working in the same institution	0.625	
		I am duly respected in the institution.	0.831	
		I get due recognition making me feel a valued member of this institution.	0.695	
	Overall satisfaction with the institution	I am satisfied with this institution as an employee	0.612	
		I am satisfied with my salary.	0.602	
		I am satisfied with my present job.	0.718	
		I would recommend this institution to my friends / colleagues as a great place to work.	0.796	
		I am satisfied with my status in the institutional hierarchy.	0.633	
	Organizational justice	The criteria for deciding pay raise / promotion is not clear.	0.745	
		I have full faith that the institution takes right decisions pertaining to the employees.	0.632	
		I cannot see a relation between the pay raise / promotions awarded to employees and their performance.	0.712	
Institutional Orientation for Results	Quantity	I have to sacrifice quality of work for quantity of work.	0.772	0.74
		Over here, my talent is not being utilized appropriately.	0.699	
		I am not able to make regular improvements in the quality of my work.	0.623	
	Quality enhancement	Responsibilities of people working together are not clearly distinguished.	0.618	
		Adequate staff is not available to ensure quality of work.	0.691	
		Some of the tasks that I have to do are nonproductive.	0.768	
		I do not have much choice in deciding the nature of work I have to perform.	0.458	
		There is not enough role clarity in my job.	0.752	
		No special recognition is given to employees who work beyond their job profiles, in the larger interest of the institution	0.678	

Table 3 (Contd.)...

...Table 3 (Contd.)

Supervisory Support	Guidance	My immediate superior makes efforts to help me develop myself.	0.789	0.75
		I can freely approach my immediate superior to discuss any work-related matter.	0.718	
		My immediate superior inspires me to accept challenging tasks.	0.766	
		My immediate superior usually encourages me to take independent decisions.	0.625	
		My immediate superior is a role model for me.	0.410	
	Feedback	My immediate superior gives me regular feedback about my performance.	0.825	
		My immediate superior guides me on improving performance.	0.623	
Teacher's Self Efficacy	Job accomplishment	I am convinced that I am able to successfully teach all relevant subject content to even the most difficult students.	0.725	0.82
		When I try really hard, I am able to reach even the most difficult students.	0.695	
		I know that I can motivate my students to participate in innovative projects.	0.666	
		Even if I get disrupted while teaching, I am confident that I can maintain my composure and continue to teach well.	0.692	
	Coping with job stress	I am convinced that I can develop creative ways to cope with system constraints (such as budget cuts and other administrative problems) and continue to teach well.	0.623	
		I am confident in my ability to be responsive to my students needs even if I am having a bad day.	0.798	
	Social interaction with students, parents, and colleagues	I know that I can maintain a positive relationship with parents even when tensions arise.	0.789	
		I know that I can carry out innovative projects even when I am opposed by sceptical colleagues.	0.775	
	Skill development on the job	If I try hard enough, I know that I can exert a positive influence on both the personal and academic development of my students.	0.723	
		I am convinced that, as time goes by, I will continue to become more and more capable of helping to address my students' needs.	0.71	

As a result of factor analysis, four factors got extracted in the rotated component matrix. Factor identification was based on the fact that items having highest correlation with a factor would define its conceptual meaning. After identification of the number of factors and the variables associated with each factor, the next step was to name the factors based on the variables that loaded maximum. To determine the minimum loading necessary to include in its principal factor, Hair *et al.* (1995) gave rule of thumb stating that variables with a loading of greater than 0.40 are considered significant. Those items with factor loading less than 0.40 have been removed. In present study factor loading ranged from 0.431 to 0.691. Reliability coefficient cronbach's alpha was computed for all the four factors and was above the minimum acceptable limit of 0.70 (Hair *et al.*, 2009). Table 5.4.3 summarizes the statements of the scale, their loadings on the corresponding factors and factor names. A brief description of the identified factors is given below:

Factor 1: Institutional Support

This factor was responsible for 15.84% variance of total variance. Sixteen variables are grouped in this factor which is related to the institutional support. These statements

were a combination of positively and negatively worded statements. The diverse range of statements focused on value of faculty member in an institution, opportunities for professional development and career growth, participation in decision making, respect and recognition, organizational justice and overall satisfaction with the institution. As per to Rothmann (2010) employee engagement is best predicted by organisational support and growth opportunities.

Factor 2: Institutional Orientation for Results

This factor explained 14.12% variance of total variance. Nine variables are grouped in factor 2 which are indicating the variables related to the Institutional Orientation for Results. These statements gauged the respondent's agreement or disagreement with institutions support in quality enhancement.

Factor 3: Supervisory Support

This factor was responsible for 11.34% variance of total variance. Seven variables are grouped in factor 3 related to the Supervisory Support. These statements explain the supervisory help and guidance for their subordinates, providing feedback on their performance, delegating equal and appropriate levels of responsibility without discrimination, being a role model and assisting staff in tough times. Arti Chandani (2016) explained that employees show more engagement towards the organisation when they see themselves getting praised by their immediate managers, they have the leadership's attention (for example, one-on-one conversations).

Factor 4: Teacher Self-efficacy

This factor is explaining 10.91% variance of total variance. Ten variables are grouped in factor 4 related to Teacher Self-Efficacy. Teacher self-efficacy include four areas: job accomplishment, skill development on the job, social interaction with students, parents, and colleagues, and coping with job stress. For each of these four domains teachers may hold different self-efficacy expectations. These areas are important for successful teaching.

- Estimate of multiple linear regression to identify the most influential factor determining faculty engagement

After extraction of the factors influencing faculty engagement, next the study will assess the most influential factor which determines faculty engagement. To fulfil this objective multiple linear regression technique has been applied. Prior applying this techniques, non-multicollinearity assumption of multiple linear regression has been analysed.

Table 4: Multicollinearity Statistics

Independent Variables	Tolerance	Variance Inflation Factor (VIF)
Institutional Support	.427	2.342
Institutional Orientation for Results	.653	2.834
Supervisory Support	.418	2.390
Teacher's Self Efficacy	.481	2.081

Source: Primary data

By reviewing table 4 above it can be concluded that according to the four measures to test Multicollinearity decision criterion (Ringle *et al.*, 2015) there is no multicollinearity between the four factors namely Institutional Support, Institutional Orientation for Results, Supervisory Support and Teacher's Self Efficacy.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	R Square Change	df1	df2	Sig. F Change *P-value
1	.791 ^a	.625	.907	1.000	4	445	0.000

a. Predictors; Independent Variables: (Constant), Factor 1, Factor 2, Factor 3, Factor 4

b. Dependent Variable: Faculty engagement

*Level of significance set at 5%

Model summary in table 5 presented the R^2 and Adjusted R^2 . Where R^2 indicates the percentage of variation in the dependent variable explained collectively by the independent variables. As presented in table 4 above above the four factors: Institutional Support, Institutional Orientation for

Results, Supervisory Support and Teacher's Self Efficacy together explains 62.5 % of variance in dependent variable Faculty engagement which was found to be statistically significant (Sig. F change p-value = 0.000; <0.05). While, Adjusted R^2 indicates that 90.7% of variance in dependent variable Faculty engagement was explained by each of the 4 independent variables Institutional Support, Institutional Orientation for Results, Supervisory Support and Teacher's Self Efficacy.

Table 6: Standardized Coefficients Beta

Model	Standardized Coefficients Beta	t	Sig. *p-value
1	(Constant)		
	Institutional Support (Factor1)	.749	3.140
	Institutional Orientation for Results (Factor2)	.679	2.110
	Supervisory Support (Factor3)	.624	1.972
	Teacher's Self-efficacy (Factor4)	.714	3.768

Table 6 above presented standard coefficient Beta values of different factors. The beta value is a measure of how strongly each predictor variable influences the criterion (dependent) variable. The beta is measured in units of standard deviation. It helps to compare different variables. The beta coefficient is the degree of change in the outcome variable for every 1-unit of change in the predictor variable. According to the standard coefficient Beta values, amongst the four factors, Institutional Support (Factor 1) with beta value of 0.749 reported highest beta value indicating that the faculty members were most influenced by this factor as compared to all other factors. Studies have found that employees with high organizational support suffer less stress

at work and are more inclined to return to work sooner after injury (Shaw *et al.*, 2013). A 2016 Gallup report of 2016 found that 90% of employees valued “career growth and development opportunities”. Additionally, high organizational support positively relates to performance (Kurtessis *et al.*, 2015). Followed by Teacher Self-Efficacy (Factor 4) with beta value of 0.714 was second most influential factor for faculties. Tschannen-Moran and Woolfolk Hoy (in press) defined teacher efficacy as a teacher’s “judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated”. Institutional Orientation for Results (Factor2) reported a beta value of 0.679. The Supervisory Support (Factor 3) with beta value of 0.624 was found to be the fourth influencing factor. Higher Education Institution of Himachal Pradesh must look for ways to build a cordial relationship between supervisor and employee as they play a vital role in shaping organizational culture.

Next regression weights also reported that for every 1 standard deviation change and increase in Institutional Support (Factor 1) the dependent variable Faculty engagement increases by 0.749 standard deviation. Similarly, for every 1 standard deviation change and increase in Institutional Orientation for Results (Factor2) the dependent variable Faculty engagement increases by 0.679 standard deviation. Similarly, for every 1 standard deviation change and increase in Supervisory Support (Factor 3) the dependent variable Faculty engagement increases by 0.624 standard deviation. Lastly for every 1 standard deviation change and increase in Teacher Self-Efficacy (Factor 4) the dependent variable Faculty engagement increases by 0.714 standard deviation.

Finally, all the four factors were statistically significant ($p\text{-value} = 0.000; <0.05$) which concludes that Faculty engagement had significant relationship with Institutional Support, Institutional Orientation for Results, Supervisory Support and Teacher’s Self Efficacy.

CONCLUSION AND RECOMMENDATIONS

The study was undertaken to determine antecedents which influence the engagement of faculty members working in educational institutions. The study identified four antecedents namely: Institutional Support, Institutional Orientation for Results, Supervisory Support and Teacher Self-Efficacy. Amongst these four extracted factors, faculty members were most influenced by ‘Institutional Support’. It can be concluded that employees possessing high organizational support suffer a lesser amount of stress at their job role and are more apt to return to work. Faculty have a critical role in the success of student life and institution, which is largely influenced by engaged faculties. The evidence presented in this article gives a clear message to employers that employee engagement is important for upliftment of student, institution and society. Therefore, every education institution must listen to their underling’s grievances, periodically check engagement levels and further design an action plan to resolve the issues.

REFERENCES

- [1] Adkins & Rigoni (2016). Millennials Want Jobs to Be Development Opportunities. Gallup Workplace.
- [2] Ahuja, S. (2015). *Employee Work Engagement: An Empirical Study of Higher education Sector in Punjab* (Published doctoral dissertation). Lovely Professional University, Punjab, India.
- [3] Bakker, A.B. (2009). Building engagement in the workplace. In R. J. Burke & C.L. Cooper (Eds.), *The Peak Performing Organization* (pp. 50 –72). Oxon, UK: Routledge.
- [4] Barman, A. & Ray, S. (2011). Faculty engagement in higher educational institution: a proposed model. *Romanian Journal for Multidimensional Education*, Vol. 3 (6), pp. 7 –17.
- [5] Bhatnagar, J., & Biswas, S. (2010). Predictors & Outcomes of Employee Engagement: Implications for the Resource –based View Perspective. *The Indian Journal of Industrial Relations*, Vol. 46(2), pp. 273 –286
- [6] Bray, D. (2015). IDEO’s Employee Engagement Formula. *Harvard Business Review*.
- [7] Chandani, A., & Mehta, M. (2016). Employee Engagement: A Review Paper on Factors Affecting Employee Engagement. *Indian Journal of Science and Technology*, Vol. 9(15), DOI: 10.17485/ijst/2016/v9i15/92145
- [8] Chetty, R., Friedman, J.N., & Rockoff, J.E. (2014). Measuring the impacts off teachers II: Teacher value –added and student outcomes in adulthood. *American Economic Review*, Vol. 104(9), pp: 2633 –2679.
- [9] Clotfelter, C.T., Ladd, H.F., & Vigdor, J.L. (2007). Teacher credentials and student achievement: Longitudinal analysis with student fixed effects. *Economics of Education Review*, Vol. 26, pp: 673 –682.
- [10] De Stercke, J., Goyette, N., & Robertson, J.E. 2015. Happiness in the classroom: Strategies for teacher retention and development. *Prospects*, Vol. 45, pp: 421 –427. doi:10.1007/s11125 –015 –9372 –z
- [11] Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. 2009. *Multivariate Data Analysis*. Prentice Hall.
- [12] Kahn, W.A. 1990. Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, Vol. 33, pp. 692 –724.
- [13] Kraft, M.A., Marinell, W.H., & Yee, D. 2016. School organizational contexts, teacher turnover, and student achievement: Evidence from panel data. *American Educational Research Journal*, Vol. 53(5), pp: 1411 –1449.
- [14] Kurtessis, J.N., Eisenberger, R., Ford, M.T., Buffardi, L., Stewart, K.A., & Adis, C.S. (2015 in press). Perceived organizational support: A meta –analytic evaluation of organizational support theory. *Journal of Management*.
- [15] Luthans, F., & Peterson, S. 2002. Employee engagement and manger self –efficacy. *Journal of Management Development*, Vol. 21 No. 5, pp. 376 –387.
- [16] Monica, S. (2016). Study Makes the Case for Employee Engagement in Higher Education Institutions. *Cornerstone On Demand and Ellucian survey*.
- [17] Myung, & McDonald, B. 2017. Understanding Employee Engagement in the Public Sector: The Role of Immediate Supervisor, Perceived Organizational Support, and Learning Opportunities. *The American Review of Public Administration*, Vol. 47 (8), pp. 881 –897.
- [18] Newcombe, T. (2013). *Employee Engagement a Challenge in Higher Education, Research Finds*. Software provider MidlandHR.
- [19] Peacock, L. 2008. Career fear forces employees to shun opportunity for flexible working. Retrieved from: <http://www.personneltoday.com/articles/article.aspx?iarticleidM-5705&printfriendly=true>.

- [20] QS World University Rankings 2019 (June, 2019). Retrieved, from QS Top Universities: <https://www.topuniversities.com/university-rankings/world-university-rankings/2019>. Accessed on: 26 January, 2020.
- [21] Rivkin, S.G., Hanushek, E.A., & Kain, J.F. 2005. *Teachers, Schools, and Academic Achievement*. *Econometrica*, Vol. 73(2), pp: 417–458.
- [22] Robinson, D., Perryman, S., & Hayday, S. 2004. *The Drivers of Employee Engagement Report* 408. Institute for Employment Studies, UK.
- [23] Rothmann, S., & Rothmann, S. 2010. Factors associated with employee engagement in South Africa. *SA Journal of Industrial Psychology*, Vol. 36(2). Doi: 10.4102/sajip.v36i2.925.
- [24] Ruyle, K.E., Eichinger, R.W., & De Meuse, K. P. 2009. FYI for talent engagement: *Drivers of Best Practice for Managers and Business Leaders*. Minneapolis, MN: Korn/Ferry International.
- [25] Saks, A.M. 2006. Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*, Vol. 21(7), pp. 600–619.
- [26] Schwarzer, R., Schmitz, G.S., & Daytner, G.T. (1999). *Teacher Self-Efficacy*. Freie Universität Berlin, Germany.
- [27] Shaw, W.S., Reme, S.E., Pransky, G., Woiszwilllo, M.J., Steenstra, I.A., & Linton, S.J. (2013). The pain recovery inventory of concerns and expectations: a psychosocial screening instrument to identify intervention needs among patients at elevated risk of back disability. *Journal of Occupational and Environmental Medicine / American College of Occupational and Environmental Medicine*, Vol. 55, pp. 885–894.
- [28] Shokunbi, O. (2016). Antecedents to Employee Engagement: A Qualitative Study of 28 Senior Secondary School Teachers in Nigeria. *International Journal of Scientific and Research Publications*, Vol. 6 (6).
- [29] Suhasini, T., & Kalpana, K. 2018. A Study on Factors Affecting Employee Engagement in Indian IT Industry. *International Journal of Pure and Applied Mathematics*, Vol. 118, pp. 1–13.
- [30] Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. 2007. The role of personal resources in the job demands–resources model. *International Journal of Stress Management*, Vol. 14(2), pp. 121–141. DOI: 10.1037/1072-5245.14.2.121, 10.3846/ijspm.2010.10

A Study on Factors Influencing MOOC Adoption and Usage among the Millennials

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Abstract: MOOCs have created a breakthrough for learning and skill development among learners across all age groups. The purpose of this study is to explore the motives for the adoption and usage of Massive Open Online Courses in India among the Millennial generation. For the purpose of data collection, purposive sampling was used. Only those who have enrolled/registered and completed the MOOC courses were considered for the study. In-depth structured interviews were conducted with 30 Millennials born between 1981 to 1996. Content Analysis was used to analyse the qualitative data collected through the interviews. Findings reveal Nine Cs that has enhanced the MOOC adoption and usage like Career progression, Content, Challenge, Cognitive domain, Curiosity, Convenience, Certifications, Collaborative learning experience Capability, and Competency development. The results of this study will help in creating awareness about the factors triggering the MOOC adoption and how it can be improvised to enhance the learning experience.

Keywords: MOOC, Adoption, Qualitative Research, Millennials

INTRODUCTION

The significant changes in use of the technology in the online education has seen emergence of the concept of Massive Open Online Course (MOOC) since 2012. MOOC is an open online course available to learners across the globe with no entry-exit criteria (Kaplan & Haenlein 2016). MOOC is a unique model of distance learning and lifelong learning that provides cutting edge curriculum from the world's best universities and faculties (Wen, Yang, & Rosé, 2014). Credited for democratizing education, MOOC has made the learning process global, universal and interactive. MOOCs are the last thread in a global effort of Open Movement for Education.

Started from Open Access to Open Educational Resources to MOOC, the education landscape has changed globally (Yuan & Powell, 2013). For this reason, focusing on MOOC adoption and usage has become very imperative for researchers, educators and MOOC platform providers. As rightly put forth by Liuk & et al, (2019), MOOC represents ‘just in time’ and ‘just for you’ capabilities for its learners.

MOOCs were started as a grand experiment to democratize education (Dai, et. al., 2020) and to improve its accessibility. 2012 was considered as a Year of MOOC on account of rise in MOOC platforms, learners and partnering universities (Pappano, 2012). Over the years, MOOCs have evolved to a full fledge learning opportunity that is available for everyone. Some of the popular MOOC platforms are Coursera, edX, Udacity, NPTEL, mooKIT, etc. Globally more than 900 universities are offering MOOCs to learners across continents (Class Central, 2019). As per Yuan & Powell (2013), Universities are also looking for new avenues for revenue generation from learners outside the campus. Apart from this other reasons for Universities to enter the MOOC market is to establish themselves as pioneers of innovative teaching-learning (Ospina-Delgado, Zorio-Grima, & García-Benau, 2016), to fulfil altruistic and philanthropic motives (Kolowich, 2013), gain visibility and digital presence (Hollands and Tirthali, 2014), earn rewards (Hew & Cheung, 2014) and fulfil teacher curiosity (Roth, 2013).

According to the Class Central Report of 2019, MOOC has more than 110 million subscribers and 13.5 thousand course offerings that suggests the huge spurge of MOOC. But with course completion rates being less than 5% it raises doubts on the MOOC success. India is considered to be one of the top ten markets for MOOC users yet research on the adoption, usage, and continuance intention either qualitatively or quantitatively is scare. Class Central is a search engine for MOOCs. Learners can search and review the MOOCs of their choices. It also publishes reports pertaining to MOOCs. According to Class Central 2019 report, Coursera has the highest number of learners on its platform.

Previous studies have examined the adoption and usage of MOOC using information system models among students and teachers across various countries and platforms. However, nature of factors essential for MOOC adoption and usage varies across different industries. This lack of research is experienced in developing countries too (Liyanagunawardena, Adams, & Williams, 2013). Our research focuses on the Millennial MOOC users working on full time basis in corporate jobs as majority of the studies in the past have focused on students. Also vast majority of these studies have been done in Europe, North America and China, with very few studies done in India on Millennial MOOC users (Veletsianos & Shepherdson, 2016). Very few studies exist in an Indian context in spite of having the third largest MOOC users. There is no

consensus on what constitutes MOOC adoption and usage as it has high dropout rates too. Most research on MOOC is on the pedagogical aspects (Gao & Yang, 2015). This study is designed to examine the factors influencing for MOOC adoption and usage among the Millennial users working in corporate jobs in Mumbai. To the author's knowledge, there is no such qualitative study conducted in an Indian context that combines the factors for MOOC adoption and usage for the working professionals belonging to the Millennial generation cohort. The insights from this study can help the MOOC platform providers, MOOC facilitators like teachers and staff and the universities to mould or adapt and improve the MOOC retention rates. The understanding of adoption criteria's will help all the stakeholders of higher education to design and disseminate MOOC among more learners.

The subsequent parts of the paper are structured along five sections. In the next section we represent the literature review, theoretical background and research questions for this study. The next section discusses the methodology and data collection process. Thereafter we highlight the findings and analysis. In the later section discussion and implications are given. The last section concludes the study with limitations and directions for future research.

LITERATURE REVIEW

Past research in the domain of Information Systems have studied the adoption and usage of technology using various models like Theory of Reasoned Action – TRA (Fishbein & Ajzen, 1977), Technology Acceptance Model – TAM (Davis, 1989), Theory of Planned Behaviour – TPB (Ajzen, 1991), Model combining the Technology Acceptance Model and the Theory of Planned Behaviour – CTAM – TPB (Mathieson, 1991), Model of PC Utilization – MPCU (Thompson, Higgins and Howell, 1991), Motivational Model – MM (Davis, Bagozzi and Warshaw, 1992), Innovation Diffusion Theory – IDT (Moore and Benbasat, 1991; Rogers, 1995), Social Cognitive Theory – SCT (Bandura, 1989; Compeau and Higgins, 1995), Technology Acceptance Model – TAM2 (Venkatesh & Davis, 2000), Unified Theory of Acceptance and Usage of Technology – UTAUT (Venkatesh *et al.*, 2003), Technology Acceptance Model – TAM3 (Venkatesh and Bala, 2008), Unified Theory of Acceptance and Usage of Technology – UTAUT2 (Venkatesh *et al.*, 2012). The study of MOOC adoption using the above landmark models from Information systems literature is a growing research avenue. Following are some of the important studies in this direction.

Nordin & et al, (2015) and Mulik & et al, (2018) have studies the adoption of MOOC using the Unified Theory of Acceptance and Usage of Technology – UTAUT (Venkatesh *et al.*, 2003) whereas Mohan & et al, (2020) and Tseng & et al (2019) have applied Unified Theory of Acceptance and Usage of Technology – UTAUT2 (Venkatesh *et al.*, 2012). Dai & et al, (2020) and Daneji & et al, (2019) have used the Expectancy

Confirmation Model (Bhattacharjee, 2001; Bhattacharjee and Premkumar, 2004) for understanding the continued intention for MOOC usage. Zhang, & *et al* (2017), Hsu & *et al* (2018), Tao & *et al* (2019), Teo & *et al*, (2019) have applied Technology Acceptance Model–TAM (Davis, 1989) whereas Fang, (2016) has applied Technology Acceptance Model–TAM3 (Venkatesh and Bala, 2008) for understanding the MOOC adoption. Apart from that there are several other studies that have used a combination of the technology adoption models to study MOOC acceptance. Some studies in this regards are as follows: Alraimi & *et al* (2015) have combined Expectancy Confirmation Model (Bhattacharjee, 2001; Bhattacharjee and Premkumar, 2004) and Unified Theory of Acceptance and Usage of Technology – UTAUT (Venkatesh *et al.*, 2003). Several studies have used Technology Acceptance Model in combination with other models which are as follows: Md & *et al* (2017) and Shao, (2018) have combined Technology Acceptance Model–TAM (Davis, 1989) and Expectancy Confirmation Model (Bhattacharjee, 2001; Bhattacharjee and Premkumar, 2004) for MOOC continued intention. Wu & Chen, (2017) has combined Technology Acceptance Model–TAM (Davis, 1989) with Task Technology Fit (Goodhue and Thompson, 1995) whereas Yang & Su, (2017) has combined TAM with Theory of Planned Behaviour–TPB (Ajzen, 1991). Gao & Yang, (2015) has combined TAM with Institutional Theory (Teo, Wei & Benbasat, 2003) have studied MOOC adoption. Using the Self-determination theory (Ryan & Deci, 2000), Zhou, (2016) has combined it with Theory of Planned Behaviour–TPB (Ajzen, 1991), Joo & *et al*, (2018) and Pozón-López & *et al*, (2019) has combined it with Technology Acceptance Model – TAM (Davis, 1989) whereas Sun & *et al* (2019) have combined it with Theory of Relationship Quality (Morgan & Hunt, 1994). Khan & *et al* (2018) have combined Self-determination theory (Ryan & Deci, 2000) with Task Technology Fit (Goodhue and Thompson, 1995). Jo, (2018) has combined Technology Acceptance Model–TAM (Davis, 1989), Expectancy Confirmation Model (Bhattacharjee, 2001; Bhattacharjee and Premkumar, 2004) and Unified Theory of Acceptance and Usage of Technology – UTAUT (Venkatesh *et al.*, 2003). Singh & Panigrahi, (2018) have studied MOOC adoption using Innovation Diffusion Theory. There are some studies that have also used Information System Success Model (DeLone & McLean, 1992 & 2003) in understanding MOOC acceptance and usage (Aparicio & *et al*, 2019). Fianu & *et al*, (2018) has combined this model with Unified Theory of Acceptance and Usage of Technology – UTAUT (Venkatesh *et al.*, 2003) for studying MOOC adoption.

Shapiro & *et al* (2017) have used mixed-method research to understand the attitudes, motivations and barriers of 36 MOOC users. The sample consists of diverse learners from different countries, age, experience with the subject and profession. This adds high degree of diversity in the participants with high degrees of variation in the responses. The study reveals knowledge, work, convenience, and personal interest as motivators for MOOC whereas lack of time, previous bad classroom experiences

with the subject matter, inadequate background, and lack of resources such as money, infrastructure, and internet access were the barriers highlighted in the study.

Abeer & Miri, (2014) have qualitatively studied the MOOC characteristics and views about learners. Wang & Wang, (2019) have studied five college teachers in a Chinese university to understand their MOOC orientations. Eriksson, Adawi, & Stöhr, (2017) have studied why MOOC users drop out from courses. Al Abdullatif & et al, (2020) have studied the Big Five Model of Personality to understand the continued intention to use MOOC.

Most studies in the area of MOOC adoption and usage were of quantitative in nature with very few studies exploring qualitatively the MOOC acceptance. Qualitative research unearths in depth responses of the participants which do not get aptly covered in the confines of a quantitative study. With this regard, the study intends to address this gap. India, has one of the largest number of MOOC users in the world (Class Central, 2019). India has the second largest MOOC users in the world (Nemer & O'Neill, 2019). Some of the qualitative studies on MOOC in an Indian context have studied the experience of MOOC users in Bangalore city with 20 participants of age from 18 to 64 covering the motivations and barriers for MOOC usage (Nemer & O'Neill, 2019). After a thorough literature study, it was found that hardly any qualitative studies are there to determine factors influencing MOOC in an Indian context in the city of Mumbai. So, we decided our research location to be Mumbai, India.

RESEARCH METHODOLOGY

The objective of this research paper was to determine the factors influencing the adoption and usage of MOOC among Millennials in a developing country context like India. To cater this research objective, the authors decided to undertake qualitative studies using in depth structured interviews. The rationale to use a qualitative approach was to generate unique insights and gain deeper understandings in the adoption and usage of MOOCs in India. The research location was further narrowed down to Mumbai city. Several technology acceptance models are used to understand quantitatively about the MOOC adoption in past research. . Past research for MOOC adoption has used popular models from Information systems domain like TAM, UTAUT, TPB, TRA, UTAUT2 to study the MOOC adoption through the lens of perceptual factors that cover individual as well as social factors influencing the use. More research is needed to think beyond the perimeters of the above models to probe deeper and know other motivating factors that can encourage or hinder the MOOC usage. According to authors it is limiting the understanding of MOOC usage. This study aims to find the voices of the MOOC users and aims to garner deeper insights for the MOOC adoption. As most of those research, studied a very different sample, geography and the context, the authors decided to narrow down the study to Millennial

generational cohort. Dimock, (2019) and Moreno & *et al.*, (2017) define Millennials are born between 1981 to 1996. Vinten, (1994) have stated that interviews give the respondents an opportunity to lay their opinions and beliefs and not limit themselves to a structured questionnaire as seen for quantitative studies. In-depth interviews and qualitative coding method was used to understand the factors driving the MOOC adoption and usage. All the interviews were conducted on Google Meet and it ranged from 30-40 minutes. These interviews were conducted between the month July-October 2020. The interviews were conducted in English. They were recorded after taking consent of the participants. A total of 30 respondents were interviewed for this study using convenience sampling with availability and accessibility as the choice criteria (Silverman, 2020). The interview transcripts were manually drawn. The transcripts were analysed using content analysis. This was used to identify themes, patterns and thoughts of the respondents and understand a direction of their opinions.

FINDINGS & DATA ANALYSIS

RESPONDENT PROFILE

For the purpose of this study, 30 respondents were interviewed via Google Meet. Since this research is conducted on Millennials who are born from 1981 to 1996, the age of respondents varied from 26 years to 38 years. In terms of gender composition, 40% were females and the balance were males. All the respondents possessed post graduate degree in management from various universities in India. All the respondents were working professionals with experience ranging from minimum 3 years to maximum 12 years. 70% of the respondents had experience of more than 10 years. All the respondents resided and worked in Mumbai. Respondents worked in industries like IT, Banking, Insurance, Retail, Hospitality and E-Commerce. The annual income of respondents ranged from Rs 8 Lacs to 45 Lacs. 50% of the respondents had an annual income of more than 30 Lacs.

PAST EXPERIENCE OF ONLINE LEARNING

Most respondents were used to online learning since their post graduate days. YouTube was the popular internet medium used for online learning by the respondents. Apart from this, Khan Academy was also used. Respondents have been using non-video forms also for online learning by using various educational sites, blogs, etc.

AWARENESS AND WORD OF MOUTH OF MOOCs

Most respondents were aware about MOOCs through their teachers who taught them at Post graduate level. Some of the respondents got awareness of MOOCs from their colleagues at work. The respondents in turn have informed about MOOC to their friends and family and urged them to use it.

TYPE AND NUMBER OF MOOCs UNDERTAKEN

All the respondents have used MOOCs several times. 90% respondents have completed more than five MOOCs from various platforms. Some of the courses undertaken were from domain of Data analytics, Programming, Foreign Languages, Humanities and Technology. Most courses undertaken by the respondents were such that related to their existing job profile. Some respondents also undertook few MOOCs for the novelty purpose. The courses which they have not studied in their under graduate and post graduate years were also undertaken.

MOOCs REGISTERED AND COMPLETED

All the respondents had registered in more than 20 courses but were not able to complete all of them. There was very low completion rate in comparison to the courses enrolled. This matched the global phenomena experienced with respect to MOOCs which is very high enrolment rate but very low completion rate. This mismatch was wider in free courses as compared to paid courses. Most respondents were able to complete the paid courses. But found difficulty in completing the free courses.

PAID VS FREE MOOCs (FINANCIAL ASSISTANCE FROM THE COMPANY)

All respondents enrolled and completed the paid courses. The number of paid courses completed were around 4-5. All the respondents also enrolled for free courses. In fact the number of courses enrolled in free courses was very high. The highest number of free courses enrolled was 52 and lowest was 20. 40% of respondents got financial assistance from their organisation for paying the fees for MOOCs. 60% respondents had to incur expenses on their own to pursue paid MOOC.

INDIAN VS INTERNATIONAL MOOC PLATFORMS

80% Respondents favoured international MOOC platforms over domestic platforms. Some of the international MOOC platforms used by the respondents were Coursera, edX, Udacity, Future Learn, etc. 20% of the respondents have used the free courses Indian platforms like NPTEL, SWAYAM, mooKIT, etc. All the paid courses undertaken by respondents were from International MOOC platforms and not from Indian platforms.

COMPUTING DEVICE FOR USING MOOCs

Most respondents preferred mobile (smartphone) or tablets for accessing the video and reading material over Desktop as they access the content anywhere and anytime. In terms of navigation and interface, all respondents preferred the Desktop version of the MOOC over the Mobile Application version. The Desktop access was used to save the content and work on the projects and submissions.

MANDATORY VS VOLUNTARY

All the respondents undertook MOOC voluntarily. There was no company policy or a mandate to take the MOOC. That means all the respondents undertook MOOCs for volitional purposes.

INCENTIVES FROM COMPANY ON MOOC COMPLETION

There were no incentives offered to the respondents on completion of MOOC. Although respondents expressed a strong desire to get some recognition or reward from their organisations for completing the MOOC.

Findings revealed that following motives enhanced the MOOC adoption and usage. This study establishes 9 Cs for MOOC adoption and usage which are as follows Career progression, Content, Challenge, Cognitive domain, Curiosity, Convenience, Certifications, Collaborative learning experience Capability and Competency development. The verbatim from the transcripts of various interviews were grouped for collective content analysis of the text. Following are the themes and patterns emerging from the interview transcripts that have positively influenced the adoption of MOOC among the respondents.

Career Progression

Advancing the career and attaining fulfilment at work acts as a motive for many individuals to skill up and gain new knowledge. The expectation to climb the career ladder either in the same job and industry or a new one acts as a intent desire for career progression. Training & development is one of the ways where employees can attain career progression. MOOCs offer a great opportunity for learning new skills and knowledge. This becomes a strong motivator for many to take up. The following statements from the interview support career progression aspired by the respondents:

“I want to prepare myself for the most coveted promotion that I am eyeing”

“MOOCs helps me stay abreast with the skills required for my job”

“MOOCs offer a life-long learning opportunity to me and stay relevant for my profession”

“I hope to take my career to next level with the MOOC courses”

“I want to be known as an expert thought leader in my industry and MOOCs are a great way to be current and updated”

Content

Compelling content that evokes interest and attention in the learners is a very important element for any online or offline course. Engaging content is essential to sustain learner concentration in MOOCs. High-quality cutting edge content makes MOOC very appealing for its users. Also, the course content of most MOOCs is freely downloadable and available for its users registered users. The MOOC content is available in the form of videos, transcripts, reading links, PPTs, etc. The following statements from the interview support the content required by the respondents:

“MOOC offers excellent content from some of the best faculties of the world”

“The learning resources of MOOC are available for life time access”

“The material offered by MOOCs is not found in traditional courses which makes it worthy to be pursued”

“MOOC content is very lively and the diversity in the material is helpful to visual as well as verbal learners.”

Curiosity

MOOCs have the capability to fulfil the curiosity quotient of its learners especially from Millennials and Generation Z. These generational cohorts who are also the digital natives already know a lot and would want to know more. The curiosity could be sparked due to the open nature of MOOC, an opportunity to learn with diverse people from different parts of the world and from faculties of international repute. Some of the statements that were in line with this theme are:

“Learning at this age along with my job is so exciting”

“The more experience I am getting, the more I realise that I know less and less.

And MOOCs help me know what are the new industry trends”

“To learn from the world’s best faculty from my cubicle or home is great” “I get to know so many people from different parts of the world who share the same interests as I do”

“I did that MOOC as the topic was so novel”

Convenience

MOOCs offer the ease of learning from anywhere, anytime and by anyone. The convenience offered by MOOC is one of the influencing factors for MOOC adoption. There are no entry/exit criteria and no restriction on any course to be taken. Millennial employees need not trade off a MOOC course with their job. They can continue in their existing employment and also pursue the course. So there is neither a loss of income or time when they take MOOC. The quotes that fit the theme of convenience are:

“Most videos of MOOCs are seen by me during my commute.

This saves my time and cuts the travel fatigue”

“I always wanted to learn more about nutrition but since I wasn’t a Science student I couldn’t do it.

With MOOC round the corner, I am pursuing my passion for nutrition”

“I can’t afford to give up my job for higher education. The loss of income won’t be worth”

“I have taken up 6 courses over a period of time. All are of the area which I have never studied in the past. I am enjoying the open culture of education”

“I access MOOC through my desktop and mobile. And I do so whenever wherever I want”

Challenge

MOOC courses are of very high quality. The assignments, quizzes and capstone projects in the MOOCs can be very challenging. It promotes analytical and application orientation amongst its learners. Some of the MOOCs are inter disciplinary and give a new lens of viewing a discipline. Some of the verbatim in line with the challenge theme are: *“The things that I am learning via MOOC are so different. I have never seen a discipline in this light”* *“MOOCs break the stereotype of rote learning that is associated with traditional education”*

“I enjoy the assessment patterns of MOOC as they are very different from what I have been used to” *“I like being challenged. MOOCs are so unique in its pedagogy and assessment.”*

*“MOOC can get demanding at times. But it’s worth the effort.
I like being pushed to think deeper and harder.”*

Certifications

MOOCs offer certifications on the course completion. This is a validation for the learners for the effort undertaken by them. There are many users who take MOOC for the certifications which can be mentioned in their resumes, job portals on professional networking sites. It also acts as a record of the courses undertaken.

“I appreciate that we get a certificate on completion”
“I prefer Coursera over YouTube as I get certificate for my learnings”

“The MOOC certificates have lot of value and credibility”
“My LinkedIn looks complete after I updated my MOOC certifications”

Competency & Capability Enhancement

MOOCs have the potential to enhance the capabilities of its users through its rigorous pedagogy and content. Many learners make productive gains from the skills and knowledge developed via MOOC. Many experience efficiency and effectiveness in their jobs. It helps them do their tasks in a better manner. Some of the quotes that emphasized capability enhancement are:

“The advanced excel that I did via MOOC has made my work faster and easier”
“I am able to understand my client conversations without a translator all thanks to the MOOC I did on French Language”
“I feel very confident of doing my tasks after learning from the world’s best university”
“My boss is very happy with a renewed version of myself after the MOOC I did”
“I am adding new insights during our team meetings which I learnt from the MOOC”

Collaborative Learning Experience

MOOCs promote the collaborative learning experience with group assignments and peer reviews. The peer learning is one of the strongest motivators for many learners. Some of the statements in this regard are:

“I enjoy the conversations on Discussion Forums”

“You learn so much from others especially when they are from different cultures”

“The feedback that I receive on peer graded assignments are very helpful”

“Discussion forums take away the loneliness of sole journey”

Cognitive Domain

MOOCs accentuate the thinking and knowledge processing of its learners for a specific area. These are highly intellectually stimulating courses. And the learners have an opportunity to gain expertise one domain from the beginner to intermediate to advanced level.

“I am learning so many new things from this MOOC”

“The MOOC content is very challenging and stimulating”

“I hope to gain expertise after completion of the MOOC specialisation”

DISCUSSION AND CONCLUSION

MOOCs have revolutionised the delivery of education across geography and demography. It has changed and opened several avenues for the educational technology in leaps and bounds. This study explores the factors influencing the usage of MOOC among working professionals belonging to the Millennial generation cohort. In this research, a total of 30 participants were interviewed who have pursued paid MOOCs and completed it under voluntary contexts.

Most participants had previous exposure to online learning from YouTube, Khan Academy, etc. Coursera, edX, Udacity, Future Learn were some of the international MOOC platforms most likely used by the participants. Platforms like Coursera, EdX and Udacity are known as Big Three. The year 2012 was declared as the Year of MOOC by New York Times in USA due to upsurge in the platforms providing MOOC like Coursera, EdX and Udacity (Pappano, 2012). In terms of national MOOC platforms, NPTEL, SWAYAM, mooKIT, etc. were more popularly used. These platforms have high visibility on account of publicity done by them. It was also found that majority of MOOCs completed by the participants were based on domains like Data analytics, Programming, Foreign Languages, Humanities and Technology.

This choice was to accentuate their on-job knowledge and performance capabilities.

All respondents had registered for several paid and free courses. They were able to complete the paid courses but unable to complete the free courses. In other words, there was a high dropout rate experienced for the free MOOCs. This was similar to the global phenomena of high drop-out rates for MOOCs (Daradoumis & et.al., 2013; Allione, & Stein, 2016; Dai, et. al., 2020).

Several participants also received financial assistance for completing MOOCs. This can amplify the encouragement and motivations required to pursue MOOCs. Many platforms provide MOOCs at a very exorbitant rates and such assistance can pave the way for many participants to pursue the MOOCs. But no incentives were given on

completion of MOOCs. If organisations start offering incentives to their employees on skill upgradation via MOOCs then it can boost the morale of MOOC takers.

Advancement in career is one of the major factors influencing the MOOC users in this study. Enhancing career options and progressing is considered highly important by MOOC users (Radford, et. al., 2014; Alraimi, Zo and Ciganek, 2015; Yousef, et. al., 2015). Globally, the quality of content (Wu and Chen, 2017), certification (Yousef, et al 2014), collaborative learning experience (Razmerita & *et al.*, 2019) offered by MOOC is also a reason for MOOC users. And this co-incided with our study as well. This research would like to propose a 3 E's Framework for enhancing the MOOC adoption and Usage which is as follows: Experience, Engagement and Environment



Fig. 1

For improving the MOOC usage, MOOC Experience can be enhanced by improving the learning resources, course structure, lecture delivery and diversity of the content. For enhancing MOOC engagement, focus should be on providing relevant and interactive content, ensuring learner diversity and language considerations should be emphasized. MOOC environment can also be improved by having stable internet connect, easy to use MOOC platform, navigable website and financial incentives.

LIMITATIONS AND FUTURE RESEARCH

Qualitative research is prone to several limitations. The participants for this study were Millennial Professionals working in Mumbai. This may lead to limited generalisability of the findings due to geographic and age restriction (Bryman, 2016) of the samples. On account of this limitation, future research can focus on participants from various other cities and cover sample across generational cohorts. Also, this study was limited to participants who had completed paid MOOCs. Further studies can focus on participants who had enrolled in free courses and the ones who drop put from MOOCs. Comparative research on the paid vs free courses can be further studied. Our study was also limited in the volitional contexts. Further study can be conducted to understand the factors influencing MOOC use in a mandatory contexts.

The findings of the qualitative research are tentative in nature and it paves the way for conclusive research study (Malhotra & Dash, 2016). Since it is exploratory in nature, the findings of this study can be used further for researching the MOOC adoption and acceptance behaviour.

REFERENCES

- [1] Ajzen, I., & Fishbein, M. (1977). Attitude –behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84(5), 888.
- [2] Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179 –211.
- [3] Abeer, W., & Miri, B. (2014). Students' preferences and views about learning in a MOOC. *Procedia –Social and Behavioral Sciences*, 152, 318 –323.
- [4] Alraimi, K. M., Zo, H., & Ciganek, A. P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*, 80, 28 –38.
- [5] Allione, G., & Stein, R. M. (2016). Mass attrition: An analysis of drop out from principles of microeconomics MOOC. *The Journal of Economic Education*, 47(2), 174 –186
- [6] Aparicio, M., Oliveira, T., Bacao, F., & Painho, M. (2019). Gamification: A key determinant of massive open online course (MOOC) success. *Information & Management*, 56(1), 39 –54.
- [7] Alabdullatif, H., & Iturbide, Á. V. (2019, October). Personality traits and the intention to continue to use the Smart Learning Technologies: The role played by internal and external motivations in the relationship between the Big Five Personality Traits and the Intention to Continue to Use MOOCs (ICM). In *Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality* (pp. 663 –670).
- [8] Bandura, A. (1989). Human agency in social cognitive theory. *American psychologist*, 44(9), 1175
- [9] Bhattacharjee, A. (2001). Understanding information systems continuance: an expectation–confirmation model. *Mis Quarterly*, 351–370.
- [10] Bhattacharjee, A., & Premkumar, G. (2004). Understanding changes in belief and attitude toward information technology usage: A theoretical model and longitudinal test. *Mis Quarterly*, 229–254.
- [11] Bryman, A. (2016). *Social Research Methods*. Oxford university press.
- [12] Compeau, D. R., & Higgins, C. A. (1995). Computer self –efficacy: Development of a measure and initial test. *Mis Quarterly*, 189–211
- [13] Class Central, (2019). <https://www.classcentral.com/report/mooc-stats-2019/>
- [14] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319–340.
- [15] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace 1. *Journal of applied social psychology*, 22(14), 1111–1132.
- [16] DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information systems research*, 3(1), 60–95.
- [17] Delone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten –year update. *Journal of management information systems*, 19(4), 9–30.
- [18] Daradoumis, T., Bassi, R., Xhafa, F., & Caballé, S. (2013, October). A review on massive e-learning (MOOC) design, delivery and assessment. In 2013 eighth international conference on P2P, parallel, grid, cloud and internet computing (pp. 208–213). IEEE.
- [19] Daneci, A. A., Ayub, A. F. M., & Khambari, M. N. M. (2019). The effects of perceived usefulness, confirmation and satisfaction on continuance intention in using massive open online course (MOOC). *Knowledge Management & E –Learning: An International Journal*, 11(2), 201 –214.

- [20] Dimock, M. (2019). *Defining generations: Where Millennials end and Generation Z begins*. Pew Research Center, 17(1), 1–7.
- [21] Dai, H. M., Teo, T., Rappa, N. A., & Huang, F. (2020). Explaining Chinese university students' continuance learning intention in the MOOC setting: A modified expectation confirmation model perspective. *Computers & Education*, 150, 103850.
- [22] Eriksson, T., Adawi, T., & Stöhr, C. (2017). "Time is the bottleneck": a qualitative study exploring why learners drop out of MOOCs. *Journal of Computing in Higher Education*, 29(1), 133–146.
- [23] Fang, X. (2015, August). Research of the MOOC Study Behavior Influencing Factors. In *2015 3d International Conference on Advanced Information and Communication Technology for Education (ICAICTE –2015)*. Atlantis Press.
- [24] Fang, X. (2016, April). Research of influencing factors of college teachers MOOC teaching acceptance. In *International Conference on Education, Management and Computing Technology (ICEMCT –16)*. Atlantis Press.
- [25] Fianu, E., Blewett, C., Ampong, G. O. A., & Ofori, K. S. (2018). Factors affecting MOOC usage by students in selected Ghanaian universities. *Education Sciences*, 8(2), 70.
- [26] Gao, S., & Yang, Y. (2015). Exploring users' adoption of MOOCs from the perspective of the institutional theory. *WHICEB 2015 Proceedings*, 26, 282–290.
- [27] Hollands, F. M., & Tirthali, D. (2014). *MOOCs: Expectations And Reality*. Center for Benefit–Cost Studies of Education, Teachers College, Columbia University, 138.
- [28] Hew, K. F., & Cheung, W. S. (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. *Educational Research Review*, 12, 45–58.
- [29] Hsu, J. Y., Chen, C. C., & Ting, P. F. (2018). Understanding MOOC continuance: An empirical examination of social support theory. *Interactive Learning Environments*, 26(8), 1100–1118.
- [30] Joo, Y. J., So, H. J., & Kim, N. H. (2018). Examination of relationships among students' self-determination, technology acceptance, satisfaction, and continuance intention to use K–MOOCs. *Computers & Education*, 122, 260–272.
- [31] Jo, D. H. (2018). Exploring the Determinants of MOOCs continuance intention. *TIIS*, 12(8), 3992–4005.
- [32] Kolowich, S. (2013). The professors behind the MOOC hype. *The Chronicle of Higher Education*, 18.
- [33] Kaplan, A.M. & Haenlein, M. 2016. "Higher education and the digital revolution: About MOOCs, SPOCs, social media, and the Cookie Monster". *Business Horizons*.
- [34] Khan, I. U., Hameed, Z., Yu, Y., Islam, T., Sheikh, Z., & Khan, S. U. (2018). Predicting the acceptance of MOOCs in a developing country: Application of task technology fit model, social motivation, and self–determination theory. *Telematics and Informatics*, 35(4), 964–978
- [35] Liyanagunawardena, T. R., Adams, A. A., & Williams, S. A. (2013). MOOCs: A systematic study of the published literature 2008–2012. *The International Review of Research in Open and Distributed Learning*, 14(3), 202–227.
- [36] Luik, P., Suviste, R., Lepp, M., Palts, T., Tönnisson, E., Säde, M., & Papli, K. (2019). What motivates enrolment in programming MOOCs?. *British Journal of Educational Technology*, 50(1), 153–165.
- [37] Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research*, 2(3), 173–191.

- [38] Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3), 192–222
- [39] Morgan, R. M., & Hunt, S. D. (1994). The commitment–trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20–38.
- [40] Malhotra, N. K., & Dash, S. (2016). *Marketing research: An applied orientation*. Pearson.
- [41] Moreno, F. M., Lafuente, J. G., Carreón, F. Á., & Moreno, S. M. (2017). The characterization of the millennials and their buying behavior. *International Journal of Marketing Studies*, 9(5), 135–144.
- [42] Md, A. A. D. M. N., Ayub, A. F. M., & Jaafar, W. M. W. (2017, October). Influence of Students' Perceived Ease of Use, Perceived Usefulness and Time Spent Towards Students' Continuance Intention Using MOOC Among Public University Students. In *International Conference on Education in Muslim Society (ICEMS 2017)*. Atlantis Press.
- [43] Mulik, S., Srivastava, M., & Yajnik, N. (2018). Extending UTAUT model to examine MOOC adoption. *NMIMS Management Review*.
- [44] Mohan, M. M., Upadhyaya, P., & Pillai, K. R. (2020). Intention and barriers to use MOOCs: An investigation among the post graduate students in India. *Education and Information Technologies*.
- [45] Nordin, N., Norman, H., & Embi, M. A. (2015). Technology Acceptance of Massive Open Online Courses in Malaysia. *Malaysian Journal of Distance Education*, 17(2).
- [46] Nemer, D., & O'Neill, J. (2019). Rethinking MOOCs: the promises for better education in India. *International Journal of Information Communication Technologies and Human Development (IJICTHD)*, 11(1), 36–50.
- [47] Ospina–Delgado, J. E., Zorio–Grima, A., & García–Benau, M. A. (2016). Massive open online courses in higher education: A data analysis of the MOOC supply. *Intangible Capital*, 12(5), 1401–1450.
- [48] Pozón–López, I., Kalinic, Z., Higuera–Castillo, E., & Liébana–Cabanillas, F. (2019). A multi–analytical approach to modeling of customer satisfaction and intention to use in Massive Open Online Courses (MOOC). *Interactive Learning Environments*, 1–19.
- [49] Rogers, E. M. (1995). Diffusion of Innovations: modifications of a model for telecommunications. In *Die Diffusion Von Innovationen in Der Telekommunikation* (pp. 25–38). Springer, Berlin, Heidelberg.
- [50] Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54–67
- [51] Roth, M. S. (2013). My Modern Experience Teaching a MOOC. *Chronicle of Higher Education*, 59(34), 18–21.
- [52] Radford, A. W., Robles, J., Cataylo, S., Horn, L., Thornton, J., & Whitfield, K. (2014). The employer potential of MOOCs: A mixed–methods study of human resource professionals' thinking on MOOCs. *International Review of Research in Open and Distributed Learning*, 15(5), 1–25.
- [53] Razmerita, L., Kirchner, K., Hockerts, K., & Tan, C. W. (2019). *Modeling collaborative intentions and behavior in Digital Environments: The case of a Massive Open Online Course (MOOC)*. Academy of Management Learning & Education, (ja)
- [54] Shapiro, H. B., Lee, C. H., Roth, N. E. W., Li, K., Çetinkaya–Rundel, M., & Canelas, D. A. (2017). Understanding the massive open online course (MOOC) student experience: An examination of attitudes, motivations, and barriers. *Computers & Education*, 110, 35–50

- [55] Singh, J., & Panigrahi, P.K. (2018). Acceptance of open learning resources: Perspectives of higher education students in India. *Electronic Journal of Information Systems Evaluation*, 21(2), 80–93.
- [56] Shao, Z. (2018). Examining the impact mechanism of social psychological motivations on individuals' continuance intention of MOOCs. *Internet Research*.
- [57] Sun, Y., Ni, L., Zhao, Y., Shen, X. L., & Wang, N. (2019). Understanding students' engagement in MOOCs: An integration of self –determination theory and theory of relationship quality. *British Journal of Educational Technology*, 50(6), 3156 –3174.
- [58] Silverman, D. (Ed.). (2020). *Qualitative research*. Sage Publications Limited.
- [59] Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: toward a conceptual model of utilization. *Mis Quarterly*, 125 –143.
- [60] Teo, H. H., Wei, K. K., & Benbasat, I. (2003). Predicting intention to adopt interorganizational linkages: An institutional perspective. *Mis Quarterly*, 19 –49.
- [61] Tao, D., Fu, P., Wang, Y., Zhang, T., & Qu, X. (2019). Key characteristics in designing massive open online courses (MOOCs) for user acceptance: an application of the extended technology acceptance model. *Interactive Learning Environments*, 114
- [62] Tseng, T. H., Lin, S., Wang, Y. S., & Liu, H. X. (2019). Investigating teachers' adoption of MOOCs: the perspective of UTAUT2. *Interactive Learning Environments*, 1–16.
- [63] Teo, T., & Dai, H. M. (2019). The role of time in the acceptance of MOOCs among Chinese university students. *Interactive Learning Environments*, 1–14
- [64] Panigrahi, P. K. (2018). Acceptance of open learning resources: Perspectives of higher education students in India. *Electronic Journal of Information Systems Evaluation*, 21(2), 80 –93.
- [65] Pappano, L. (2012). The Year of the MOOC. The New York Times, 2(12), 2012. Weblink – <https://www.edinaschools.org/cms/lib/MN01909547/Centricity/Domain/272/The%20Year%20of%20the%20MOOC%20NY%20Times.pdf> Accessed on 2/8/19 at 4 pm.
- [66] Vinten, G. (1994). Participant observation: a model for organizational investigation?. *Journal of Managerial Psychology*.
- [67] Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186204.
- [68] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *Mis Quarterly*, 425–478.
- [69] Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision sciences*, 39(2), 273–315.
- [70] Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *Mis Quarterly*, 157 –178
- [71] Veletsianos, G., & Shepherdson, P. (2016). A systematic analysis and synthesis of the empirical MOOC literature published in 2013–2015. *The International Review of Research in Open and Distributed Learning*, 17(2).
- [72] Wen, M., Yang, D., & Rose, C. (2014, July). Sentiment Analysis in MOOC Discussion Forums: What does it tell us?. In *Educational Data Mining 2014*
- [73] Wu, B., & Chen, X. (2015, August). Research on MOOCs continuance. In *3rd International Conference on Material, Mechanical and Manufacturing Engineering (IC3ME 2015)*. Atlantis Press

- [74] Wang, J., & Wang, Y. (2019). Analysis on the Influencing Factors of MOOC Adoption Behaviour of Faculty: Cross –Case Study based on a Chinese University. In CSEDU (1) (pp. 145 –152). Singh, J., &
- [75] Yuan, L., & Powell, S. (2013). MOOCs and disruptive innovation: Implications for higher education. eLearning Papers, In –depth, 33(2), 1–7.
- [76] Yuan, L., & Powell, S. (2013). MOOCs and open education: *Implications for Higher Education: A White Paper*. JISC CETIS.
- [77] Yousef, A. M. F., Chatti, M. A., Schroeder, U., & Wosnitza, M. (2014, July). What drives a successful MOOC? An empirical examination of criteria to assure design quality of MOOCs. In 2014 *IEEE 14th International Conference on Advanced Learning Technologies* (pp. 44–48). IEEE.
- [78] Yousef, A. M. F., Chatti, M. A., Schroeder, U., & Wosnitza, M. (2015). A usability evaluation of a blended MOOC environment: An experimental case study. *International Review of Research in Open and Distributed Learning*, 16(2), 69–93.
- [79] Yang, H. H., & Su, C. H. (2017). Learner behaviour in a MOOC practice –oriented course: in empirical study integrating TAM and TPB. *International Review of Research in Open and Distributed Learning*: IRRODL, 18(5), 35–63.
- [80] Zhou, M. (2016). Chinese university students’ acceptance of MOOCs: A selfdetermination perspective. *Computers & Education*, 92, 194–203
- [81] Zhang, Z., Cao, T., Shu, J., & Liu, H. (2020). Identifying key factors affecting college students’ adoption of the e –learning system in mandatory blended learning environments. *Interactive Learning Environments*, 1–14.

An Exploratory Study of Millennial Investors and Psychological Biases Coalesced around Decision Making Behaviour

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Abstract: This paper aims to explore how behavioural biases have altered the rational decision making and investing patterns of Gen Y investors. To dig deeper into Gen Yers' investing patterns, this study conducted thirty exploratory semi-structured interviews that enabled us to identify the underlying beliefs and feelings affecting their individual investment decision making. Respondents' rationale for investment decisions are analysed by means of open coding of verbal data. The purposive sampling technique was used by the researchers. Electronic means were used to access the respondents. The interviews lasted between 15 to 25 minutes which were analysed using thematic analysis. For similarities and differences in themes, the content analysis technique was implemented. Our findings reveal that each generation investing patterns are different. We found that millennial are being frugal in their expenses, optimizing their savings, and expanding their investment portfolios. More importantly, our data reflects the fragility of Gen Y financial prospects as the generation is subject towards fear of missing out, framing, mental accounting and socially responsible investment bias. The findings of this study will enable investment managers to accurately profile their investors and offer refined investment options to investors who seek maximum mileage from their resources.

Keywords: Psychological Biases, Behavioural Finance, Consumer Psychology, Financial Decision Making, Generation Y, Qualitative Research

INTRODUCTION

Consumer financial decision making has recently become a more established subfield of consumer research: Numerous sessions at premier conferences, a stand-alone annual meeting and research centre at the University of Colorado, and a special issue of the Journal of Marketing Research have coalesced around this topic. Accordingly, in the present study, our primary goal is to add to the existing body of literature generational underpinnings for better comprehending the heterogeneous investment attitude of millennial. Given that consumer financial decision making covers a range of themes related to behavioural finance, we have organized existing literature through the lens of generation across three primary areas: financial behaviours that deviate from

rational decision making, psychosocial determinants of millennial and behavioural biases associated with millennial generation. We close with an extensive discussion about the gaps in the literature and proposals for future directions. The reasons for using the interview method in the context of understanding the financial investment behaviour of millennial is as follows.

First, people are unwilling to give truthful answers to questions that invade their privacy (that are confidential and sensitive in nature), for example, discussing “personal finances” or financial behaviour (Churchill 2001; Malhotra 2005) (their financial status and financial beliefs and preferences). In-depth interviews, conducted one-on-one, are one of the best methods available for probing the personal opinions, beliefs, and values of me generation, enabling very rich depth of information and allowing for inquiry into hidden issues. Second, people are at times unable to provide accurate answers to questions that tap their unconscious (Churchill 2001; Malhotra 2005), for example, the values, emotional drives, and motivations that lead to preference of some financial investment products over others (Churchill, 2001). In-depth interviews cause no social pressure on respondents to conform to a certain view. Finally, self-reported beliefs and biases, in the initial stage of exploring the phenomenon, are not representative of what people do under actual circumstances. It is important that the detection of these tendencies take place in the process of the describing oneself and one’s abilities and plans about financial planning and management, which calls for the interview technique as a suitable method of collecting qualitative data. (Cummins & Nistico, 2002). Given the above considerations, In-depth Interviews, a direct qualitative research procedure was used for the purpose of this exploratory study. Hence, by taking a descriptive view of the how millennial investor makes their investment decisions in the real world settings, we explore the beliefs and preferences that guide the investor’s behaviour (Kvale, 2007; Lovric *et al.*, 2008). The research question for the study was: what are the biases that millennial investors have that influence their financial investment decisions?

LITERATURE REVIEW

The world would have been a better place if we were Homo economicus but fortunately/unfortunately we are Homo sapiens and most of our decisions are based on the environment and circumstances that we are in and that’s where we deviate from traditional economic decision making theory and adopt behavioural approach towards decision making. The study of how the individual investment choices are influenced by various biases comes under the purview of the micro aspect of Behavioural Finance. Psychological biases were first identified by Amos Tversky and Daniel Kahneman (1974). Financial decisions have lasting consequences for consumer welfare and other important decisions. Consumers engage in diverse financial decisions which are related to monetary aspects or impact the saving or consumption levels, all having consequential impact on decision making behaviour, (Greenberg & Hershfield, 2018).

The psychology behind consumer behaviour towards financial product has received empirical attention. Although various individual level decisions such as savings, budgeting, debt planning contribute to financial well-being (Greenberg & Hershfield, 2018), investment decisions tend to be most critical determinant of financial well-being (Pompain 2008). Prior studies have rarely examined investment decision patterns of Indian investors, (Sahi *et al.*, 2013).

The intricacies in financial market shifted scholarly focus from financial markets to financial investors susceptible to behavioural influences in the financial market place (Zahera & Bansal, 2018). Investors “often lack the motivation and ability to engage in complex, cognitive and behavioural processes and reduces cognitive efforts in information processing as a consequence of which financial decisions tend to be less than optimal (Shah *et al.* 2017). This results in investors tendency to base decisions on what heuristics theory refers to as rule of thumb” (Kahneman & Tversky, 2002), thus making investment decision making a simplified process (Bakar and Yi, 2016; Jordan et al, 2012). The theoretical underpinnings of traditional finance assume financial markets derive their efficiency from perfectly informed investors who with the aim of maximising their utility evaluate investment decisions rationally Sahi (2017). However, many behavioural theorists maintain that rather than a dichotomous phenomenon, investment decision making can be explained by a continuum of rationality. Prospect theory explains the decision makers’ attitude towards transactional output rather than overall outcome Kumar and Goyal (2015). Given the significance of behavioural and psychological dimensions of finance in identifying investors’ biases in their investment choices, (Sahi et al 2013), this study will contribute towards designing optimum investment solutions. Based on the principles of standard financial theories, the discipline of financial management is often regarded as backbone of traditional economic order Zaher and Bansal (2018). Given the significance of examination of investors psychology in understanding aberrant market behaviour especially in terms of market volatility (Zahera and Bansal 2018).

Even when investors have access to complete market information, behavioural biases as a consequence of peer influence and investors psychology can undermine rational decision making (Zahera and Bansal 2018). Investors are suspicious about portfolio offering both high risk and return, they are risk averse (Zahera and Bansal 2018). Deviations in decision making are patterns of human mind and techniques man uses for filtering large volume of information. Such deviations affect investors investment attitude, so requires beyond in-depth penetration, in order to understand decision makers perceptivity towards biases, Sahi and Arora (2012). Given the investor’s profiling techniques of investment, investors often diverge from there rational behaviour of investment and pursue investments that counter there set standards, Pompain and Longo (2004). Investment decision choices are contingent upon cultural context and entry costs

Zahera and Bansal (2018). Psychological biases are the reasons for irrational behaviour of investors (Zahera and Bansal 2018). Prior studies have identified various factors that shape investment decisions such as firm reputation and performance, real estate taxation, currency fluctuation (e.g. Zahera and Bansal 2018; Netemeyer 2017). Investors tend to invest in known instrument to mitigate information related to risk (Zahera and Bansal 2018). Literature identifies irrational investors who attribute irrationality to their own judgements referred to as introspective investors, as against aggregating investors whose irrationality is driven by the actions of others. Notably, the latter but not former affect market efficiency. Prospect theory (Kahenman and Tversky 1979) postulates investment decisions are function of choice alternatives among expected losses and gains rather than the probability of final outcomes (Bernoulli and Daniel 1738). When examining the role of ethnocentric orientation on investor's decision, a growing body of literature indicates that investors are partial towards domestic companies. This preference is in substantial part attributed to investors' trust in government policies, ease of tax collection (Mohllman 2013), trade governance, market size (Daly and vo 2013), group affiliation and social influence (Fellner and Maciejovsky 2003). (Bakar and yi 2016) The theoretical underpinnings of traditional finance are based on underlying assumptions regarding investors' objective assessment of securities (Toma 2015) and purported immunity to emotional influences. As investors cross the boundaries of rational decision making which violates the assumptions of financial theories such as efficient market hypothesis (Fama 1970), capital asset pricing model (Sharpe), modern portfolio theory (Markowitz), arbitrage pricing theory (Modigliani and Miller), Contemporary behavioural finance theories seeks to explain investors' tendency to evaluate probable outcomes of investment decisions (e.g. Kahenman and Tversky, 1979). The identification of investors' susceptibility to emotional influences contributed to evolution of behavioural finance as an independent research stream (Toma 2015). Even when investors take risk disproportionate to expected returns, such irrationality is unlikely to adversely affect efficiency as long as investors represent a minority among market participants, Dickason and Ferreira (2018). The prevalence of market anomalies can be attributed to asset pricing in stocks as a consequence of factors other than market information, Dickason and Ferreira (2018) which usually manifest in the form of cognitive structure.

One of the greatest challenges for banks and wealth managers is perhaps attracting millennial, society's young adults that are repeatedly correlated with words like "tech-savvy," "self-absorbed," and "free spirited." However, the question is why financial services focus so much on millennial. The population of millennial has been continuously rising over the past years and currently millennial are the largest generation. Furthermore, until 2020, the aggregated net worth of global millennial is expected to be more than double than the one of 2015, approaching \$24 trillion (Goldman sachs 2015). To capture this growing market, financial services are looking

at the characteristics that set millennial apart from previous generations investment-wise. It is really the societal circumstances and the series of global events that took place while millennial were growing up and have played a major role in forming their investing approach.

METHOD

Given the paucity of the prior empirical research that investigated the behaviour of the millennial generation, regarding financial investment decisions and behavioural errors, a qualitative personal interview approach was adopted to gather in-depth information within a real life context and build theory

DATA COLLECTION

In-depth semi-structured interviews were carried out to study the financial investment behaviour of the millennial investors. In in-depth research interviews, participants are “conversation partners” or “informants” and not respondents as they are in survey interviews (Rubin and Rubin 1995; Kvale 2007). The motive of the interview is to pose questions so as to obtain knowledge pertaining to the informant’s world by “stripping the surface of the conscious experience” (Kvale 2007, p.19). The conduct of the in-depth interview was inspired by the grounded theory approach, emphasizing the role of human actors in shaping and giving meaning to the world around them, stressing the interrelationships among conditions, meaning, and action (Strauss and Corbin 1990). Since the objective was to investigate individual level constructs in the context of financial investment decisions, in-depth interviews were considered as an appropriate tool to unravel the beliefs, preferences, and predispositions. Further, financial matters are not discussed candidly and comfortably in group discussion. Hence, in-depth interviews were considered a useful tool.

SAMPLING

For the successful accomplishment of the objectives of the study, a representative sample was required. This pertained to a small group of people who were “nested in their context and studied in-depth” Miles and Huberman (1994, p. 27) and were “information rich” (Gliner, Morgan and Leech 2009, p. 124). Therefore, it was important to obtain a suitable sample size that would generate enough data (Strauss and Corbin 1990; Auerbach and Silverstein 2003; Creswell 2003) to help arrive at analytical generalizations (Firestone 1993; Miles and Huberman 1994). Variability in this phase was ensured through purposive sampling (Miles and Huberman 1994; Gliner *et al.* 2009). The sampling strategy employed was criterion sampling, wherein the informants were searched based on certain criteria (Patton 1990; Kuzel 1992). Including the informants based on a certain criteria was critical with regard to the phenomenon we were trying to study.

To qualify for the interview, the informant was required to: 1) be a resident of India and an active investor in the NSE, 2) have been making financial investment decisions in his/her household for at least the last two years, 3) belong to the generation Y i.e., born between (1981-1997), 4) have investment in at least three different investment categories, 5) have investment product categories are equities, preference, bonds, mutual fund, derivatives and debentures.

To facilitate the identification of the individuals who meet the criterion, a snowball method was employed. One key informant was identified and he/she was asked to suggest others who would fulfill the criteria. Hence, sampling was based on criterion and snowball methods (Miles and Huberman 1994; Gliner *et al.* 2009). The data so gathered allowed the determination of sample size. In this case purposive sampling, the selection of informants continued until the point of data saturation, that is, when no new information was discovered.

In this exploratory study, in-depth interviews were conducted with 30 informants (millennial) to understand the underlying factors that affect the choice of investment. Each interview was between 30 minutes and 1.5 hours of duration. The data collection was carried out at Google meet platform due to COVID 19 pandemic situations throughout the world.

The interview approach followed in this study, was a response-guided approach (Thomas, 2003), in which the interview started with some prepared questions and then the follow-up questions were logical extensions to the answers given to the initial question. This enabled a detailed investigation of the respondents opinion. Conversational prompts were employed, and a laddering technique was used. Questions were constructed in such a way as to provide direction to respondents, but not restrict responses. Each question had several open-ended probes that were used to encourage further discussion on the topic. Close-ended questions were asked pertaining to the demographics, information on family income, occupation, and so forth. The sample comprised both male ($n = 23$) and female ($n = 7$) informants, with number of years of investment experience, different occupation types, i.e., business, service, retired, housewives, and different age groups (see Table 1).

Table1: Sample Characteristics

S.No.	Occupation	Gender	Age	Investment Experience (Years)
Informant 1	Private Service	Male	28	5
Informant 2	Private Service	Male	32	7
Informant 3	Government Employee	Male	35	9
Informant 4	Private Service	Male	25	2
Informant 5	Government Employee	Male	25	1
Informant 6	Government Employee	Male	30	4

Table 1 (Contd.)...

...Table 1 (Contd.)

Informant 7	Government Employee	Female	35	6
Informant 8	Private Service	Female	25	5
Informant 9	Private Service	Male	30	6
Informant 10	Government Employee	Male	35	7
Informant 11	Government Employee	Male	35	7
Informant 12	Government Employee	Male	35	6
Informant 13	Government Employee	Male	35	7
Informant 14	Private Service	Male	30	5
Informant 15	Private Service	Male	35	7
Informant 16	Government Employee	Male	30	4
Informant 17	Government Employee	Male	35	7
Informant 18	Doctor	Female	35	7
Informant 19	Lawyer	Female	32	7
Informant 20	Government Employee	Female	37	8
Informant 21	Private Service	Female	30	4
Informant 22	Private Service	Male	34	8
Informant 23	Doctor	Male	35	6
Informant 24	Private Service	Male	30	7
Informant 25	Self-Employed	Female	37	6
Informant 26	Doctor	Male	35	7
Informant 27	Business	Male	40	9
Informant 28	Business	Male	28	4
Informant 29	Self-Employed	Male	35	8
Informant 30	Self-Employed	Male	31	9

DATA ANALYSIS TECHNIQUE

The data collected from the interviews were analysed using a technique called “Open Analysis” (McKeone, 1995). In this technique, which is a form of content analysis, the dominant messages and subject matter within the text were identified. The process followed in Open Analysis for analyzing the interview text is similar to the one followed in the case of Open Coding as elaborated by Strauss and Corbin, 1990. Hence, the statements that were made by the informants were analysed for their significance with respect to their beliefs and preferences impacting their choice of investment products and satisfaction with their financial situation.

Once the particular phenomenon was identified, they were clubbed into categories. (Strauss and Corbin, 1990). The open analysis of the text was done by reading the interview text line by line and then noting the instances (Strauss and Corbin, 1990). For understanding the beliefs and preferences, even one statement was of significance. This technique of qualitative form of content analysis summarizes and classifies the

text material by assigning labels or categories to them. This inductive approach to content analysis was more useful since there were limited previous studies that have explored the phenomenon.

RESULTS AND FINDINGS

The interviews with individual showed certain behavioural tendencies that millennial exhibited with regard to financial investment decisions. Several themes emerged.

THE PHYGITAL INVESTOR

The first pattern is related to the preference towards digital wealth management service: This generation has been familiarized with technology since their early childhood and technology constitutes an inextricable part of their lives. As such, they can easily understand and adapt to new technologies and are more than willing to embrace tech innovation. They wish to spend less time at the desks of financial advisors and more time making decisions themselves or monitoring their portfolio through their digital devices.

There was a common understanding among the respondents that they should be able to remotely manage their portfolios. Although some investors displayed satisfaction with their existing digital experiences, most of them were of the opinion that existing digital platforms provided less than seamless experience. The following transcript highlights this notion:

“Sometimes I have to personally visit my investment manager for things which can be managed online. I think they should do something about it.”

Notably investors appeared to be keen to retain the option of availing brick and mortar services. This tendency seems to be more prominent for services such as a major investment decision, long term advice etc. These findings highlight the “phygital mind-set” of contemporary millennial investor.

Surprisingly millennials sort to compare their digital investing experiences with other digital experiences such as digital shopping experiences. As one investor said:

*“If I can buy a pair of shoes online and return it on the store why can’t I do with my investment?
“Once I had to transfer my share in my wife’s name they told me to visit the office.”*

These findings are consistent with previous studies. For example, as reported by Goldman Sachs, 50% of millennials count on fintech start-ups to overhaul banks. In other words, millennials expect that, through partnerships with fintech start-ups, large banks will offer new digital ways to invest or manage finances. Another study YouGov survey(2018) finds that 59% of millennial in the UK are likely to use an online platform to manage their saving.

THE RESPONSIBLE INVESTOR

The second pattern is increased interest for sustainable investing. Millennials seek to combine financial returns with positive impact. After all, millennial are the generation that is the most concerned about the well-being of the planet. The main reason for this is that they are and will be experiencing the effects of climate change and how much harm it can cause. Furthermore, 87% of millennials believe that environmental, social and governance factors are an important when deciding among investment opportunities, compared with 65% of Gen X and only 48% of baby boomers (US Trust Bank of America, 2018). Millennials seek to combine competitive financial returns with positive impact.

Millennial investors exhibited a strong preference towards investing in stocks that are linked to socially responsible companies. They claim to be conscious about the social, environmental and ecological outcomes of their investment decisions. As 29 year old lawyer expressed:

"I would not want to invest in a company that procures diamonds from illegal mines company in Africa."

It's plausible that millennial investors seem to be conscious about not only the immediate nature of business but also the way business activities are conducted. They are especially sensitive about the positive impact of their investment returns to the extent that some are willing to sacrifice part of their returns for sustainable developments. Some notable verbatim are reported:

"Once I read a news article that this company was involved in child labour so I decided to sell the stock."

"I think if the company is taking responsibility towards societal development I may be willing to give a part of my returns. I don't know may be "if I can trust the brand why not."

These findings are consistent with a report published by UBS states that millennial are two times more likely than the average person to divest from a company that does not meet sustainability practices (e.g. companies that rely heavily on fossil fuels) (US Trust Bank, 2018).

Morgan Stanley also reported that 86% of Millennial investors are interested in sustainable investing. According to the same report, millennials are twice as likely as the broader investment population to invest in companies targeting social or environmental goals.

THE BULLISH INVESTOR

Millennial investors seem to exhibit a bullish sentiment as many of them are confident about the future of their investments. Although, the ongoing pandemic has left the market somewhat gloomy, millennials are hopeful that they will be able to have a

decent run on the bull market. Many of them are also confident that they are saving enough and that they won't run out money in the near future.

"I think my savings will help me to face any potential hardships. I am sure"

Many of them seem to be undeterred by the current pandemic. They seem to display resilience and focused on the future despite the weak macroenvironment. They feel that their smart investment decisions made in the past will help them to overcome future uncertainties.

*"I have made some great investment decisions in my life.
I think that will shield me from any upcoming risks."*

DISCUSSION

Literature has identified various factors such as fear of losing money Toma (2015) that contributes to cognitive errors in decision making. Investors invest in the market they are familiar with and provide sufficient information to its investors Zahera and Bansal (2018). Behavioural finance did not emerge as an extension of traditional financial theories and models but as an independent discipline based on sound theoretical and experimental foundation Zahera and Bansal (2018). The findings of the study are expected to guide investors towards investing in profitable investment, which rational investors usually benefit from Zahera and Bansal (2018). Traditional financial models do not have the capability to explain deviant investor behaviour which behavioural models based on bounded rationality have explained with commendable insights Bouteska and Regaieg (2018). Our efforts to understand behavioural biases are constrained by disparity in investor behaviour Bouteska and Regaieg (2018). To the extent that investors are influenced by cognitive and emotional motives, scholarly research would continue to be relevant in our pursuit towards achieving efficiency in financial markets. As global financial market continues to expand, investors susceptibility towards psychological biases inhibits their capability to capitalize on growing investment avenues Sahi (2017). The theoretical underpinnings of traditional finance assume financial markets derive their efficiency from perfectly informed investors who with the aim of maximising their utility evaluate investment decisions rationally Sahi (2017). However, behavioural theorists (e.g. Kahneman and Tversky 1979; Bakar and Yi, 2016) maintain that rather than a dichotomous phenomenon, investment decision making can be explained by a continuum of rationality. Prior studies e.g. Metawa, *et al.* (2018) have established a positive relationship between investor sentiments and investment decision. Investor sentiments have also been reported to mediate the relationship between age, education level, and gender and investment decisions. These findings suggest that investor sentiments are function of generation an investor belongs as each generation specific characteristics influence how financial decisions are made.

IMPLICATION

The findings of this study indicate that each generation have its perceptions and beliefs with regard to their financial investment decision behaviour. These perceptions and beliefs together bias course of action. Some of these biases come from an emotional point of view while others from a logical point of view. This study extends the existing knowledge base by establishing the importance of millennial biases in financial investment decisions. This is pertinent in furthering the understanding of the investor Psychology as investor biases reveal the intricacies of the human mind. Also, the positive relationship of many of the biases with the individuals sense of satisfaction with their financial planning and management, further establishes that the millennial investor biases are a normal phenomenon and that they are systematic behaviours that guide the process of their decision making. When it comes to financial investment decisions, it is pertinent to note that a certain degree of uncertainty and risk is inherent in each investment decision choice and given the fact that the future holds a certain level of uncertainty associated with it, the investment decision behaviour is expected to be biased (Slovic 1972; Thaler 1999). However as Olsen (2007) stated, a “bias is not necessarily bad as long as it leads to the results that the decision maker wishes”. It is essential to understand why people develop these biases and how it helps them to cope with the demands of decision making. This research provides evidence that investor biases are an inherent part of the financial investment behaviour and financial service providers will benefit greatly by using psychographic variables like investor bias, to gather a better understanding of the financial consumer. Given that the success of communication programme targeted at minimising investor irrationality relies upon examination of psychological influences in investment decisions (Bakar and Yi, 2016), this study is expected to help fund managers, regulators, policy makers in their pursuit to direct millennial investors towards rationality.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

This study has some limitations, but it also provides avenues for future research. Given its exploratory nature, the focus of this study was on achieving understanding, rather than on generalizing. The main findings, therefore, must be understood in the context of the study’s methodological trade-offs and limitations. This study did not specifically examine the product categories of generations. Future research could be based on experimental studies investigating the impact of specific product categories and product information, and experimental methodologies could investigate how each generation strategizes their investment decisions. Theoretically, it would be interesting to examine whether millennial really “don’t care,” as they claim, or whether such claims are neutralization techniques. This study was restricted to Indian consumers only. Previous research suggests that certain traditional Indian cultural values heuristics, beliefs. This suggestion should encourage future researchers to examine whether the findings of this study would be observed in other cultures/countries.

REFERENCES

- [1] Allgood, S., & Walstad, W.B. (2016). The effects of perceived and actual financial literacy on financial behaviors. *Economic Inquiry*, 54(1), 675–697. <https://doi.org/10.1111/ecin.12255>
- [2] Amar, M., Ariely, D., Ayal, S., Cryder, C.E., & Rick, S.I. (2011). Winning the battle but losing the war: The psychology of debt management. *Journal of Marketing Research*, 48(SPL), S38–S50. <https://doi.org/10.1509/jmkr.48.SPL.S38>
- [3] Antonides, G., De Groot, I.M., & Van Raaij, W.F. (2011). Mental budgeting and the management of household finance. *Journal of Economic Psychology*, 32(4), 546–555. <https://doi.org/10.1016/j.joep.2011.04.001>
- [4] Atlas, S.A., Johnson, E.J., & Payne, J.W. (2017). Time preferences and mortgage choice. *Journal of Marketing Research*, 54(3), 415–429. <https://doi.org/10.1509/jmr.14.0481>
- [5] Auerbach, C.F. and L.B. Silverstein. *Qualitative Data: An Introduction to Coding and Analysis*. New York, NY: New York University Press, 2003
- [6] Azurdia, G., & Freedman, S. (2016). Encouraging nonretirement savings at tax time: Final impact findings from the SaveUSA evaluation. New York: MDRC. Retrieved from https://www.mdrc.org/sites/default/files/SaveUSA_FinalReport%202015.pdf.
- [7] Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. In G.M. Constantinides, M. Harris, & R. Stulz (Eds.), *Handbook of the Economics of Finance*, Vol. 1 (pp. 1053–1128). North Holland: Elsevier.
- [8] Baker, H. Kent and John R. Nofsinger. “Psychological Biases of Investors.” *Financial Services Review*, 11, (2002), pp. 97–116.
- [9] Barcellos, S.H., Carvalho, L.S., Smith, J.P., & Yoong, J. (2016). Financial education interventions targeting immigrants and children of immigrants: Results from a randomized control trial. *Journal of Consumer Affairs*, 50(2), 263–285. <https://doi.org/10.1111/joca.12097>
- [10] Bartels, D.M., & Rips, L.J. (2010). Psychological connectedness and intertemporal choice. *Journal of Experimental Psychology: General*, 139(1), 49–69. <https://doi.org/10.1037/a0018062>
- [11] Bartels, D.M., & Urminsky, O. (2011). On intertemporal selfishness: How the perceived instability of identity underlies impatient consumption. *Journal of Consumer Research*, 38(1), 182–198. <https://doi.org/10.1086/658339>
- [12] Bartels, D.M., & Urminsky, O. (2015). To know and to care: How awareness and valuation of the future jointly shape consumer spending. *Journal of Consumer Research*, 41(6), 1469–1485. <https://doi.org/10.1086/680670>
- [13] Barua, R., Koh, B., & Mitchell, O. S. (2018). Does financial education enhance financial preparedness? Evidence from a natural experiment in Singapore. *Journal of Pension Economics and Finance*, 17(3), 254–277. <https://doi.org/10.1017/S1474747217000312>
- [14] Benartzi, S., & Thaler, R. (2007). Heuristics and biases in retirement savings behavior. *Journal of Economic Perspectives*, 21(3), 81–104. <https://doi.org/10.1257/jep.21.3.81>
- [15] Benartzi, S., & Thaler, R.H. (2013). Behavioral economics and the retirement savings crisis. *Science*, 339(6124), 1152–1153. <https://doi.org/10.1126/science.1231320>
- [16] Berman, J.Z., Tran, A.T., Lynch, J.G. Jr., & Zauberaman, G. (2016). Expense neglect in forecasting personal finances. *Journal of Marketing Research*, 53(4), 535–550. <https://doi.org/10.1509/jmr.15.0101>

- [17] Bernthal, M.J., Crockett, D., & Rose, R.L. (2005). Credit cards as lifestyle facilitators. *Journal of Consumer Research*, 32(1), 130–145. <https://doi.org/10.1086/429605>
- [18] Berry, J., Karlan, D., & Pradhan, M. (2018). The impact of financial education for youth in Ghana. *World Development*, 102, 71–89. <https://doi.org/10.1016/j.worlddev.2017.09.011>
- [19] Besharat, A., Carrillat, F.A., & Ladik, D.M. (2014). When motivation is against debtors best interest: The illusion of goal progress in credit card debt repayment. *Journal of Public Policy and Marketing*, 33(2), 143–158. <https://doi.org/10.1509/jppm.13.007>
- [20] Besharat, A., Varki, S., & Craig, A.W. (2015). Keeping consumers in the red: Hedonic debt prioritization within multiple debt accounts. *Journal of Consumer Psychology*, 25(2), 311–316. <https://doi.org/10.1016/j.jcps.2014.08.005>
- [21] Beshears, J., Choi, J.J., Laibson, D., Madrian, B. C., & Milkman, K.L. (2015). The effect of providing peer information on retirement savings decisions. *Journal of Finance*, 70(3), 1161–1201. <https://doi.org/10.1111/jofi.12258>
- [22] Bolton, L.E., Bloom, P.N., & Cohen, J.B. (2011). Using loan plus lender literacy information to combat one-sided marketing of debt consolidation loans. *Journal of Marketing Research*, 48(SPL), S51–S59. <https://doi.org/10.1509/jmkr.48.SPL.S51>
- [23] Brown, J.R., Kapteyn, A., & Mitchell, O. S. (2016). Framing and claiming: How information framing affects expected Social Security claiming behavior. *Journal of Risk and Insurance*, 83(1), 139–162. <https://doi.org/10.1111/j.1539-6975.2013.12004.x>
- [24] Brown, A.L., & Lahey, J.N. (2015). Small victories: Creating intrinsic motivation in task completion and debt repayment. *Journal of Marketing Research*, 52(6), 768–783. <https://doi.org/10.1509/jmr.14.0281>
- [25] Brown, S., Taylor, K., & Price, S.W. (2005). Debt and distress: Evaluating the psychological cost of credit. *Journal of Economic Psychology*, 26(5), 642–663. <https://doi.org/10.1016/j.joep.2005.01.002>
- [26] Bruhn, M., Leão, L.D.S., Legovini, A., Marchetti, R., & Zia, B. (2016). The impact of high school financial education: Evidence from a large-scale evaluation in Brazil. *American Economic Journal: Applied Economics*, 8(4), 256–295. <https://doi.org/10.1257/app.20150149>
- [27] Bryan, C. J., & Herschfield, H. E. (2012). You owe it to yourself: Boosting retirement saving with a responsibility-based appeal. *Journal of Experimental Psychology: General*, 141(3), 429–432. <https://doi.org/10.1037/a0026173>
- [28] Callender, C., & Mason, G. (2017). Does student loan debt deter higher education participation? New evidence from England. *Annals of American Political and Social Science*, 671(1), 20–48. <https://doi.org/10.1177/0002716217696041>
- [29] Carpena, F., Cole, S., Shapiro, J., & Zia, B. (in press). The ABCs of financial education: Experimental evidence on attitudes, behavior, and cognitive biases. *Management Science*. <https://doi.org/10.1287/mnsc.2017.2819>
- [30] Carvalho, L.S., Meier, S., & Wang, S.W. (2016). Poverty and economic decision making: Evidence from changes in financial resources at payday. *American Economic Review*, 106(2), 260–284. <https://doi.org/10.1257/aer.20140481>

- [31] Churchill, G.A., Jr. Basic Marketing Research. Orlando, FL: Harcourt College Publishers, 2001.
- Colby, H., & Chapman, G. B. (2013). Savings, subgoals, and reference points. *Judgment and Decision Making*, 8(1), 16–24.
- [32] Croy, G., Gerrans, P., & Speelman, C. (2010). Injunctive social norms primacy over descriptive social norms in retirement savings decisions. *International Journal of Aging and Human Development*, 71(4), 259– 282. <https://doi.org/10.2190/AG.71.4.a>
- Cummins, R. A. and H. Nistico. “Maintaining Life Satisfaction: The Role of Positive Cognitive Bias.” *Journal of Happiness Studies*, 3 (2002), pp. 37–69.
- [33] Diaz-Serrano, L. (2009). Disentangling the housing satisfaction puzzle: Does homeownership really matter? *Journal of Economic Psychology*, 30(5), 745–755. <https://doi.org/10.1016/j.joep.2009.06.006>
- Du, R. Y., & Kamakura, W. A. (2008). Where did all that money go? Understanding how consumers allocate their consumption budget. *Journal of Marketing*, 72(6), 109–131. <https://doi.org/10.1509/jmkg.72.6.109>
- [34] Duclos, R. (2015). The psychology of investment behavior: (De)biasing financial decision making one graph at a time. *Journal of Consumer Psychology*, 25(2), 317–325. <https://doi.org/10.1016/j.jcps.2014.11.005>
- [35] Durante, K.M., & Laran, J. (2016). The effect of stress on consumer saving and spending. *Journal of Marketing Research*, 53(5), 814–828. <https://doi.org/10.1509/jmr.15.0319>
- [36] Epley, N., & Gneezy, A. (2007). The framing of financial windfalls and implications for public policy. *Journal of Socio-Economics*, 36(1), 36–47. <https://doi.org/10.1016/j.socrec.2005.12.012>
- [37] Ersner-Hershfield, H., Garton, M.T., Ballard, K., Samanez-Larkin, G.R., & Knutson, B. (2009). Don’t stop thinking about tomorrow: Individual differences in future self-continuity account for saving. *Judgment and Decision Making*, 4(4), 280–286.
- [38] Ersner-Hershfield, H., Wimmer, G.E., & Knutson, B. (2009). Saving for the future self: Neural measures of future self-continuity predict temporal discounting. *Social Cognitive and Affective Neuroscience*, 4(1), 85–92. <https://doi.org/10.1093/scan/nsn042>
- [39] Federal Reserve Bank of New York. (2018). Household debt and credit report. Retrieved from <https://www.newyorkfed.org/microeconomics/hhdc.html>.
- [40] Feinberg, R.A. (1986). Credit cards as spending facilitating stimuli: A conditioning interpretation. *Journal of Consumer Research*, 13(3), 348–356. <https://doi.org/10.1086/209074>
- [41] Fernandes, D., Lynch, J.G. Jr., & Netemeyer, R.G. (2014). Financial literacy, financial education, and downstream financial behaviors. *Management Science*, 60(8), 1861–1883. <https://doi.org/10.1287/mnsc.2013.1849>
- [42] Frederick, S., Loewenstein, G., & O’Donoghue, T. (2002). Time discounting and time preference: A critical review. *Journal of Economic Literature*, 40(2), 351–401. <https://doi.org/10.1257/jel.40.2.351>
- [43] Frederick, S., Novemsky, N., Wang, J., Dhar, R., & Nowlis, S. (2009). Opportunity cost neglect. *Journal of Consumer Research*, 36(4), 553– 561. <https://doi.org/10.1086/599764>
- [44] Fry, T.R.L., Mihajilo, S., Russell, R., & Brooks, R. (2008). The factors influencing saving in a matched savings program: Goals, knowledge of payment instruments, and other behavior. *Journal of Family and Economic Issues*, 29, 234–250. <https://doi.org/10.1007/s10834-008-9106-y>
- [45] Gal, D., & McShane, B.B. (2012). Can small victories help win the war? Evidence from consumer debt management *Journal of Marketing Research*, 49(4), 487–501. <https://doi.org/10.1509/jmr.11.0272>

- [46] Garbinsky, E.N., Klesse, A.K., & Aaker, J. (2014). Money in the bank: Feeling powerful increases saving. *Journal of Consumer Research*, 41(3), 610–623. <https://doi.org/10.1086/676965>
- [47] Gasiorowska, A. (2014). The relationship between objective and subjective wealth is moderated by financial control and mediated by money anxiety. *Journal of Economic Psychology*, 43, 64–74. <https://doi.org/10.1016/j.joep.2014.04.007>
- [48] Gathergood, J. (2012). Self-control, financial literacy and consumer over-indebtedness. *Journal of Economic Psychology*, 33(3), 590–602. <https://doi.org/10.1016/j.joep.2011.11.006>
- [49] Golsteyn, B.H., Grönqvist, H., & Lindahl, L. (2014). Adolescent time preferences predict lifetime outcomes. *Economic Journal*, 124(580), F739–F761. <https://doi.org/10.1111/eoj.12095>
- [50] Gourville, J.T., & Soman, D. (1998). Payment depreciation: The behavioral effects of temporally separating payments from consumption. *Journal of Consumer Research*, 25(2), 160–174. <https://doi.org/10.1086/209533>
- [51] Greenberg, A.E. (2013). When imagining future wealth influences risky decision making. *Judgment and Decision Making*, 8(3), 268–277.
- [52] Greenberg, A.E., & Hershfield, H.E. (2016). Debt aversion and the trajectories of psychological pain. In P. Moreau, & S. Puntoni (Eds.), *Advances in Consumer Research*, Vol. 44 (pp. 123–127). Duluth, MN: Association for Consumer Research.
- [53] Greenberg, A.E., Hershfield, H.E., Payne, J.W., Shu, S.B., & Spiller, S.A. (2017). Exploring how uncertainty in longevity estimates predicts Social Security claiming decisions. *NBER Retirement Research Center Paper No. 17-09*.
- [54] Greenberg, A.E., Hershfield, H.E., Shu, S.B., & Spiller, S.A. (2018). *What Motivates Social Security Claiming Age Intentions? Testing Behaviorally-Informed Interventions Alongside Individual Differences*. Unpublished manuscript.
- [55] Greenberg, A.E., & Mogilner, C. (2018). Consumer debt and life satisfaction. Unpublished manuscript. Greenberg, A.E., & Spiller, S. A. (2016). Opportunity cost neglect attenuates the effect of choices on preferences. *Psychological Science*, 27(1), 103–113. <https://doi.org/10.1177/0956797615608267>
- [56] Greenberg AE., Hershfield H.E. Financial decision making. *Consum Psychol Rev.* 2019;2:17–29. <https://doi.org/10.1002/arcp.1043>
- [57] Greenberg, A.E., Sussman, A.B., & Hershfield, H.E. (2018). *Financial Product Sensitivity Predicts Financial Health*. Unpublished manuscript.
- [58] Grinstein-Weiss, M., Cryder, C., Despard, M.R., Perantie, D.C., Oliphant, J.E., & Ariely, D. (2017). The role of choice architecture in promoting saving at tax time: Evidence from a large-scale field experiment. *Behavioral Science and Policy*, 3(2), 20–38. <https://doi.org/10.1353/bsp.2017.0011>
- [59] Grinstein-Weiss, M., Russell, B.D., Gale, W.G., Key, C., & Ariely, D. (2017). Behavioral interventions to increase tax-time saving: Evidence from a national randomized trial. *Journal of Consumer Affairs*, 51(1), 3–26. <https://doi.org/10.1111/joca.12114>
- [60] Griskevicius, V., Ackerman, J. M., Cantú, S. M., Delton, A. W., Robertson, T. E., Simpson, J. A., Tybur, J. M. (2013). When the economy falters, do people spend or save? Responses to resource scarcity depend on childhood environments. *Psychological Science*, 24(2), 197–205. <https://doi.org/10.1177/0956797612451471>
- [61] Gupta, R., Hasler, A., Lusardi, A., & Oggero, N. (2018). Financial fragility in the U.S.: Evidence and implications. Washington: Global Financial Literacy Excellence Center. Retrieved from <http://gflec.org/wp-content/uploads/2018/04/Financial-Fragility-Research-Paper-04-16-2018-Final.pdf?x87657>.

- [62] Hadar, L., Sood, S., & Fox, C.R. (2013). Subjective knowledge in consumer financial decisions. *Journal of Marketing Research*, 50(3), 303– 316. <https://doi.org/10.1509/jmr.10.0518>
- [63] Haisley, E., Mostafa, R., & Loewenstein, G. (2008). Subjective relative income and lottery ticket purchases. *Journal of Behavioral Decision Making*, 21(3), 283–295. <https://doi.org/10.1002/bdm.588>
- [64] Hastings, J. S., Madrian, B.C., & Skimmyhorn, W.L. (2013). Financial literacy, financial education, and economic outcomes. *Annual Review of Economics*, 5, 347–373. <https://doi.org/10.1146/annureveconomics-082312-125807>
- [65] Haws, K.L., Bearden, W.O., & Nenkov, G.Y. (2012). Consumer spending self-control effectiveness and outcome elaboration prompts. *Journal of the Academy of Marketing Science*, 40(5), 695–710. <https://doi.org/10.1007/s11747-011-0249-2>
- [66] Heath, C., Larrick, R.P., & Wu, G. (1999). Goals as reference points. *Cognitive Psychology*, 38(1), 79–109. <https://doi.org/10.1006/cogp.1998.0708>
- [67] Hershfield, H.E. (2018). The self over time. *Current Opinion in Psychology*, 26, 72–75. <https://doi.org/10.1016/j.copsyc.2018.06.004>
- [68] Hershfield, H.E., & Roese, N.J. (2015). Dual payoff scenario warnings on credit card statements elicit suboptimal payoff decisions. *Journal of Consumer Psychology*, 25(1), 15–27. <https://doi.org/10.1016/j.jcps.2014.06.005>
- [69] Hirschman, E.C. (1979). Differences in consumer purchase behavior by credit card payment system. *Journal of Consumer Research*, 6(1), 58– 66. <https://doi.org/10.1086/208748>
- [70] H. Kent Baker, Satish Kumar, Nisha Goyal, Vidhu Gaur, (2018) “How financial literacy and demographic variables relate to behavioral biases”, *Managerial Finance*, <https://doi.org/10.1016/j.jcps.2014.06.005>
- [71] Jappelli, T., & Pistaferri, L. (2010). The consumption response to income changes. *Annual Review of Economics*, 2(1), 479–506. <https://doi.org/10.1146/annurev.economics.050708.142933>
- [72] Jones, L.E., Loibl, C., & Tennyson, S. (2015). Effects of informational nudges on consumer debt repayment behaviors. *Journal of Economic Psychology*, 51, 16–33. <https://doi.org/10.1016/j.joe.2015.06.009>
- [73] Joshi, P.D., & Fast, N.J. (2013). Power and reduced temporal discounting. *Psychological Science*, 24(4), 432–438. <https://doi.org/10.1177/0956797612457950>
- [74] Kamakura, W.A., & Du, R.Y. (2011). How economic contractions and expansions affect expenditure patterns. *Journal of Consumer Research*, 39(2), 229–247. <https://doi.org/10.1086/662611>
- [75] Karlan, D., McConnell, M., Mullainathan, S., & Zinman, J. (2016). Getting to the top of mind: How reminders increase saving *Management Science*, 62(12), 3393–3411. <https://doi.org/10.1287/mnsc.2015.2296>
- [76] Kettle, K. L., Trudel, R., Blanchard, S. J., & Häubl, G. (2016). Repayment concentration and consumer motivation to get out of debt. *Journal of Consumer Research*, 43(3), 460–477. <https://doi.org/10.1093/jcr/ucw037>
- [77] Key, C., Tucker, J.N., Grinstein-Weiss, M., & Comer, K. (2015). Tax-time savings among low-income households in the \$aveNYC program. *Journal of Consumer Affairs*, 49(3), 489–518. <https://doi.org/10.1111/joca.12070>
- [78] Keys, B.J., & Wang, J. (in press). Minimum payments and debt paydown in consumer credit cards. *Journal of Financial Economics*. <https://doi.org/10.1016/j.jfineco.2018.09.009>

- [79] Kengatharan, L. and Kengatharan, N. (2014), “The influence of behavioral factors in making investment decisions and performance: study on investors of Colombo stock exchange”, Sri Lanka”, *Asian Journal of Finance & Accounting*, Vol. 6 No. 1, p. 1, available at: <https://doi.org/10.5296/ajfa.v6i1.4893>
- [80] Kirchlér, E. and Maciejovsky, B. (2002), “Simultaneous over-and underconfidence: evidence from experimental asset markets”, *Journal of Risk and Uncertainty*, Vol. 25 No. 1, pp. 65-85.
- [81] Knoll, M.A.Z. (2011). Behavioral and psychological aspects of the retirement decision. *Social Security Bulletin*, 71(4), 15–32.
- [82] Knoll, M.A.Z., Appelt, K. C., Johnson, E.J., & Westfall, J.E. (2015). Time to retire: Why Americans claim benefits early & how to encourage delay. *Behavioral Science and Policy*, 1(1), 53–62. <https://doi.org/10.1353/bsp.2015.0003>
- [83] Krupp, D.B., & Cook, T.R. (2018). Local competition amplifies the corrosive effects of inequality. *Psychological Science*, 29(5), 824–833. <https://doi.org/10.1177/0956797617748419>
- [84] Kumar, S. and Goyal, N. (2015), “Behavioral biases in investment decision making”, *Qualitative Research in Financial Markets*, Vol. 7 No. 1, pp. 88-108.
- [85] Kubilay, B. and Bayrakdaroglu, A. (2016), “An empirical research on investor biases in financial decision-making, financial risk tolerance and financial personality”, *International Journal of Financial Research*, Vol. 7 No. 2, p. 171.
- [86] Kvale, S. *Doing Interviews*. London, England: Sage Publications, 2007.
- [87] Lovric, M., U. Kaymak and J. Spronk. “A Conceptual Model of Investor Behaviour.” ERIM Report Series Reference No. ERS-2008-030-F and A (2008). Retrieved from <http://ssrn.com/abstract=1144293>
- [88] Larson, J. S., & Hamilton, R. (2012). When budgeting backfires: How self-imposed price restraints can increase spending. *Journal of Marketing Research*, 49(2), 218–230. <https://doi.org/10.1509/jmr.10.0508>
- [89] Loibl, C., Kraybill, D. S., & DeMay, S. W. (2011). Accounting for the role of habit in regular saving. *Journal of Economic Psychology*, 32(4), 581– 592. <https://doi.org/10.1016/j.joep.2011.04.004>
- [90] Lusardi, A. (2012). Numeracy, financial literacy, and financial decision making. *Numeracy*, 5(1), 1– 14.
- [90] Lusardi, A., & Mitchell, O. S. (2007). Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. *Journal of Monetary Economics*, 54(1), 205–224. <https://doi.org/10.1016/j.jmoneco.2006.12.001>
- [91] Lusardi, A., & Mitchell, O. S. (2011). Financial literacy and planning: Implications for retirement wellbeing. In O. S. Mitchell, & A. Lusardi(Eds.), *Financial literacy: Implications for retirement security and the financial marketplace* (pp. 17–39). Oxford, UK: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199696819.001.0001>
- [92] Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52(1), 5–44. <https://doi.org/10.1257/jel.52.1.5>
- [93] Lusardi, A., Schneider, D., & Tufano, P. (2011). Financially fragile households: Evidence and implications. *Brookings Papers on Economic Activity*, 42(1), 83–151. <https://doi.org/10.1353/eca.2011.0002>
- [94] Lusardi, A., & Tufano, P. (2015). Debt literacy, financial experiences, and overindebtedness. *Journal of Pension Economics and Finance*, 14(4), 332–368. <https://doi.org/10.1017/S1474747215000232>

- [95] Lynch, J.G. Jr. (2011). Introduction to the Journal of Marketing Research special interdisciplinary issue on consumer financial decision making. *Journal of Marketing Research*, 48(SPL), Siv–Sviii. <https://doi.org/10.1509/jmkr.48.SPL.Siv>
- [96] Lynch, J.G. Jr., Netemeyer, R.G., Spiller, S.A., & Zammit, A. (2009). A generalizable scale of propensity to plan: The long and the short of planning for time and for money. *Journal of Consumer Research*, 37(1), 108–128. <https://doi.org/10.1086/649907>
- [97] Malkoc, S. & Zaubermaier, G. (2019). Psychological analysis of consumer decisions from an intertemporal choice perspective. *Consumer Psychology Review*, 2(1), 97–113. <https://doi.org/10.1002/arcp.1048>.
- [98] Malhotra, N. *Marketing Research: An Applied Orientation*. New Delhi, India: Prentice Hall India, 2005.
- [99] McHugh, S. & Ranyard, R. (2012). Credit repayment decisions: The role of long-term consequence information, economic and psychological factors. *Review of Behavioral Finance*, 4(2), 98–112. <https://doi.org/10.1108/19405971211284880>
- [100] McKeone, D. H. *Measuring Your Media Profile*. London, England: Gower Press, 1995.
- [101] McKenzie, C. R. & Liersch, M. J. (2011). Misunderstanding savings growth: Implications for retirement savings behavior. *Journal of Marketing Research*, 48(SPL), S1–S13. <https://doi.org/10.1509/jmkr.48.SPL.S1>
- [102] Meier, S. & Sprenger, C. (2010). Present-biased preferences and credit card borrowing. *American Economic Journal: Applied Economics*, 2(1), 193–210. <https://doi.org/10.1257/app.2.1.193>
- [103] Meier, S. & Sprenger, C.D. (2012). Time discounting predicts creditworthiness. *Psychological Science*, 23(1), 56–58. <https://doi.org/10.1177/0956797611425931>
- [104] Millet, K., Lamey, L. & Van den Bergh, B. (2012). Avoiding negative vs. achieving positive outcomes in hard and prosperous economic times. *Organizational Behavior and Human Decision Processes*, 117(2), 275– 284. <https://doi.org/10.1016/j.obhdp.2011.11.008>
- [105] Mishra, S., Hing, L.S.S., & Lalumiere, M. L. (2015). Inequality and risk-taking. *Evolutionary Psychology*, 13(3), 1–11. <https://doi.org/10.1177/1474704915596295>
- [106] Morewedge, C.K., Holtzman, L., & Epley, N. (2007). Unfixed resources: Perceived costs, consumption, and the accessible account effect. *Journal of Consumer Research*, 34(4), 459–467. <https://doi.org/10.1086/518540>
- [107] Munnell, A.H., Webb, A., & Golub-Sass, F. (2012). *The National Retirement Risk Index: An Update*. Center for Retirement Research at Boston College, 1, 719–744.
- [108] Navarro-Martinez, D., Salisbury, L.C., Lemon, K.N., Stewart, N., Matthews, W.J., & Harris, A.J.L. (2011). Minimum required payment and supplemental information disclosure effects on consumer debt repayment decisions. *Journal of Marketing Research*, 48(SPL), S60–S77. <https://doi.org/10.1509/jmkr.48.SPL.S60>
- [109] Netemeyer, R.G., Warmath, D., Fernandes, D., & Lynch, J.G. Jr. (2018). How am I doing? Perceived financial well-being, its potential antecedents, and its relation to overall well-being. *Journal of Consumer Research*, 45(1), 68–89. <https://doi.org/10.1093/jcr/ucx109>
- [110] Noura Metawa, M. Kabir Hassan, Saad Metawa, M. Faisal Safa, (2019) “Impact of behavioral factors on investors’ financial decisions: case of the Egyptian stock market”, *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 12 Issue: 1, pp.30-55, <https://doi.org/10.1108/IMEFM-12-2017-0333>
- [111] Nurnberg, P., Schapiro, M., & Zimmerman, D. (2012). Students choosing colleges: Understanding the matriculation decision at a highly selective private institution. *Economics of Education Review*, 31(1), 1–8. <https://doi.org/10.1016/j.econedurev.2011.07.005>

- [112] Ordabayeva, N., & Chandon, P. (2010). Getting ahead of the Joneses: When equality increases conspicuous consumption among bottom-tier consumers. *Journal of Consumer Research*, 38(1), 27–41. <https://doi.org/10.1086/658165>
- [113] Parfit, D. (1984). *Reasons and Persons*. Oxford, UK: Oxford University Press.
- [114] Patrick, V.M., & Park, C.W. (2006). Paying before consuming: Examining the robustness of consumers' preference for prepayment. *Journal of Retailing*, 82(3), 165–175. <https://doi.org/10.1016/j.jretai.2006.06.002>
- [115] Payne, B.K., Brown-Iannuzzi, J.L., & Hannay, J.W. (2017). Economic inequality increases risk taking. *Proceedings of the National Academy of Sciences*, 114(18), 4643–4648. <https://doi.org/10.1073/pnas.1616453114>
- [116] Payne, J.W., Sagara, N., Shu, S.B., Appelt, K.C., & Johnson, E.J. (2013). Life expectancy as a constructed belief: Evidence of a live-to or die-by framing effect. *Journal of Risk and Uncertainty*, 46(1), 27–50. <https://doi.org/10.1007/s11166-012-9158-0>
- [117] Peetz, J., & Buehler, R. (2009). Is there a budget fallacy? The role of savings goals in the prediction of personal spending. *Personality and Social Psychology Bulletin*, 35(12), 1579–1591. <https://doi.org/10.1177/0146167209345160>
- [118] Peetz, J., & Buehler, R. (2012). When distance pays off: The role of construal level in spending predictions. *Journal of Experimental Social Psychology*, 48(1), 395–398. <https://doi.org/10.1016/j.jesp.2011.07.016>
- [119] Peetz, J., & Buehler, R. (2013). Different goals, different predictions: Accuracy and bias in financial planning for events and time periods. *Journal of Applied Social Psychology*, 43(5), 1079–1088. <https://doi.org/10.1111/jasp.12072>
- [120] Peetz, J., Simmons, M., Chen, J., & Buehler, R. (2016). Predictions on the go: Prevalence of spontaneous spending predictions. *Judgment and Decision Making*, 11(1), 48–61.
- [121] Peñaloza, L., & Barnhart, M. (2011). Living U.S. capitalism: The normalization of credit/debt. *Journal of Consumer Research*, 38(4), 743–762. <https://doi.org/10.1086/660116>
- [122] Peters, E. (2012). Beyond comprehension: The role of numeracy in judgments and decisions. *Current Directions in Psychological Science*, 21(1), 31–35. <https://doi.org/10.1177/0963721411429960>
- [123] Pew Charitable Trusts. (2014). The complex story of American debt. Retrieved from http://www.pewtrusts.org/~media/assets/2015/07/reach-ofdebt-report_artfinal.pdf.
- [124] Plantinga, A., Krijnen, J.M., Zeelenberg, M., & Breugelmans, S.M. (2018). Evidence for opportunity cost neglect in the poor. *Journal of Behavioral Decision Making*, 31(1), 65–73. <https://doi.org/10.1002/bdm.2041>
- [125] Porto, N., & Collins, J.M. (2017). The role of refund expectations in savings: Evidence from volunteer income tax preparation programs in the United States. *Journal of Consumer Affairs*, 51(1), 183–199. <https://doi.org/10.1111/joca.12118>
- [126] Prelec, D., & Loewenstein, G. (1998). The red and the black: Mental accounting of savings and debt. *Marketing Science*, 17(1), 4–28. <https://doi.org/10.1287/mksc.17.1.4>
- [127] Prelec, D., & Simester, D. (2001). Always leave home without it: A further investigation of the credit-card effect on willingness to pay. *Marketing Letters*, 12(1), 5–12. <https://doi.org/10.1023/A:1008196717017>
- [128] Raghubir, P., & Das, S.R. (2009). The long and short of it: Why are stocks with shorter runs preferred? *Journal of Consumer Research*, 36(6), 964–982. <https://doi.org/10.1086/644762>
- [129] Raghubir, P., & Srivastava, J. (2008). Monopoly money: The effect of payment coupling and form on spending behavior. *Journal of Experimental Psychology: Applied*, 14(3), 213–225. <http://doi.org/10.1037/1076-898X.14.3.213>

- [130] Rick, S.I., Cryder, C.E., & Loewenstein, G. (2007). Tightwads and spendthrifts. *Journal of Consumer Research*, 34(6), 767–782. <https://doi.org/10.1086/523285>
- [131] Rick, S.I., Small, D.A., & Finkel, E.J. (2011). Fatal (fiscal) attraction: Spendthrifts and tightwads in marriage. *Journal of Marketing Research*, 48(2), 228–237. <https://doi.org/10.1509/jmkr.48.2.228>
- Saez, E. (2009). Details matter: The impact of presentation and information on the take-up of financial incentives for retirement saving. *American Economic Journal: Economic Policy*, 1(1), 204–228. <https://doi.org/10.1257/pol.1.1.204>
- [132] Sahi SK. Psychological biases of individual investors and financial satisfaction. *J Consumer Behav*. 2017. <https://doi.org/10.1002/cb.1644>.
- [133] Salisbury, L.C. (2014). Minimum payment warnings and information disclosure effects on consumer debt repayment decisions. *Journal of Public Policy and Marketing*, 33(1), 49–64. <https://doi.org/10.1509/jppm.11.116>
- [134] Satish Kumar, Nisha Goyal, (2015) “Behavioural biases in investment decision making – a systematic literature review”, *Qualitative Research in Financial Markets*, Vol. 7 Issue: 1, pp.88-108, <https://doi.org/10.1108/QRFM-07-2014-0022>
- [135] Scholten, M., & Read, D. (2010). The psychology of intertemporal tradeoffs. *Psychological Review*, 117(3), 925–944. <https://doi.org/10.1037/a0019619>
- [136] Shah, A.M., Eisenkraft, N., Bettman, J.R., & Chartrand, T.L. (2015). “Paper or plastic?”: How we pay influences post-transaction connection. *Journal of Consumer Research*, 42(5), 688–708. <https://doi.org/10.1093/jcr/ucv056>
- [137] Shah, A.K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science*, 338(6107), 682–685. <https://doi.org/10.1126/science.1222426>
- [138] Shah, A.K., Shafir, E., & Mullainathan, S. (2015). Scarcity frames value. *Psychological Science*, 26(4), 402–412. <https://doi.org/10.1177/0956797614563958>
- [139] Shalini Kalra Sahi , Ashok Pratap Arora & Nand Dhameja (2013) An Exploratory Inquiry into the Psychological Biases in Financial Investment Behavior, *Journal of Behavioral Finance*, 14:2, 94-103, DOI: 10.1080/15427560.2013.790387
- [140] Shalini Kalra Sahi Ashok Pratap Arora, (2012),”Individual investor biases: a segmentation analysis”, *Qualitative Research in Financial Markets*, Vol. 4 Iss 1 pp. 6 - 25 Permanent link to this document: <http://dx.doi.org/10.1108/17554171211213522>.
- [141] Shu, S.B. & Payne, J.W. (2016). Life expectation judgments, fairness, and loss aversion in the psychology of Social Security claiming decisions. Unpublished manuscript.
- [142] Simonsohn, U. (2010). Weather to go to college. *Economic Journal*, 120(543), 270–280. <https://doi.org/10.1111/j.1468-0297.2009.02296.x>
- [143] Soll, J.B., Keeney, R.L., & Larrick, R.P. (2013). Consumer misunderstanding of credit card use, payments, and debt: Causes and solutions. *Journal of Public Policy and Marketing*, 32(1), 66–81. <https://doi.org/10.1509/jppm.11.061>
- [144] Soman, D. (2001). Effects of payment mechanism on spending behavior: The role of rehearsal and immediacy of payments. *Journal of Consumer Research*, 27(4), 460–474. <https://doi.org/10.1086/319621>
- [145] Soman, D., & Cheema, A. (2002). The effect of credit on spending decisions: The role of the credit limit and credibility. *Marketing Science*, 21(1), 32–53. <https://doi.org/10.1287/mksc.21.1.32.155>
- [146] Soman, D., & Cheema, A. (2011). Earmarking and partitioning: Increasing saving by low-income households. *Journal of Marketing Research*, 48(SPL), S14–S22. *Journal of Consumer Research*, 39(4), 800–814. <https://doi.org/10.1086/665833>

- [147] Strauss, A. and J. Corbin. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park, CA: Sage Publications, 1990.
- [148] Sussman, A.B., & O'Brien, R. L. (2016). Knowing when to spend: Unintended financial consequences of earmarking to encourage savings. *Journal of Marketing Research*, 53(5), 790–803. <https://doi.org/10.1509/jmr.14.0455>
- [149] Sussman, A.B., & Shafir, E. (2012). On assets and debt in the psychology of perceived wealth. *Psychological Science*, 23(1), 101–108. <https://doi.org/10.1177/0956797611421484>
- [150] Syed Aliya Zahera, Rohit Bansal, (2018) “Do investors exhibit behavioral biases in investment decision making? A systematic review”, *Qualitative Research in Financial Markets*, Vol. 10 Issue: 2, pp.210-251, <https://doi.org/10.1108/QRFM-04-2017-0028>
- [151] Syed Zulfikar Ali Shah, Maqsood Ahmad, Faisal Mahmood, (2018) “Heuristic biases in investment decision-making and perceived market efficiency: A survey at the Pakistan stock exchange”, *Qualitative Research in Financial Markets*, Vol. 10 Issue: 1, pp.85-110, <https://doi.org/10.1108/>
- [152] Tam, L., & Dholakia, U.M. (2011). Delay and duration effects of time frames on personal savings estimates and behavior. *Organizational Behavior and Human Decision Processes*, 114(2), 142–152. <https://doi.org/10.1016/j.obhdp.2010.10.009>
- [153] Tam, L., & Dholakia, U. (2014). Saving in cycles: How to get people to save more money. *Psychological Science*, 25(2), 531–537. <https://doi.org/10.1177/0956797613512129>
- [154] Thomas, M., Desai, K.K., & Seenivasan, S. (2010). How credit card payments increase unhealthy food purchases: Visceral regulation of vices. *Journal of Consumer Research*, 38(1), 126–139. <https://doi.org/10.1086/657331>
- [155] Ülkümen, G., & Cheema, A. (2011). Framing goals to influence personal savings: The role of specificity and construal level. *Journal of Marketing Research*, 48(6), 958–969. <https://doi.org/10.1509/jmr.09.0516>
- [156] Ülkümen, G., Thomas, M., & Morwitz, V. G. (2008). Will I spend more in 12 months or a year? The effect of ease of estimation and confidence on budget estimates. *Journal of Consumer Research*, 35(2), 245–256. <https://doi.org/10.1086/587627>
- [157] Van Ittersum, K., Pennings, J.M., & Wansink, B. (2010). Trying harder and doing worse: How grocery shoppers track in-store spending. *Journal of Marketing*, 74(2), 90–104. <https://doi.org/10.1509/jmkg.74.2.90>
- [158] Van Ittersum, K., Wansink, B., Pennings, J.M., & Sheehan, D. (2013). Smart shopping carts: How real-time feedback influences spending. *Journal of Marketing*, 77(6), 21–36. <https://doi.org/10.1509/jm.12.0060>
- [159] Warren, N.L., & Sorescu, A. (2017). Interpreting the stock returns to new product announcements: How the past shapes investors' expectations of the future. *Journal of Marketing Research*, 54(5), 799–815. <https://doi.org/10.1509/jmr.14.0119>
- [160] Wiener, J., & Doescher, T. (2008). A framework for promoting retirement savings. *Journal of Consumer Affairs*, 42(2), 137–164. <https://doi.org/10.1111/j.1745-6606.2008.00102.x>
- [161] Willis, L.E. (2011). The financial education fallacy. *American Economic Review*, 101(3), 429–434. <https://doi.org/10.1257/aer.101.3.429>

Comparative Study of Online and Offline Teaching Technologies on Student's Learning: Study based on School Students Located in Rural Areas of NCR

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Abstract: This study is framed to differentiate the effects of student's learning in school from online classes with that of physical classes in rural areas. Purpose of this study is to understand the teaching learning process during the current COVID-19 pandemic. This situation gives scope to the researcher because the period of COVID-19 stretched from one academic session to another. At this time, it becomes important to understand different aspects of online teaching and learning on the student. Nature of research methodology is empirical, prospective and experimental. Single stage cluster sampling is used to carry out this study. For the purpose of data analysis, t-test is applied so that distinction between mean score can be identified. Based on the study, it is found that although the teacher is same on both the platforms but there is a difference between the learning outcomes of students taking classes through online and offline mode. Also, effectiveness and efficiency of teachers reduced when they use online platforms.

Keywords: Student's Learning; Online Teaching; Learning Outcome

INTRODUCTION

Commencement of Online classes in the schools has resulted in the transformation of a new teaching- learning experience for the students. COVID-19 pandemic interrupted the normal way of life across the world. Overnight, everything and everyone came to a standstill. Each citizen was having some unanswered questions in their mind. In the midst of the entire dilemma, virtual world came to the rescue. Every aspect was a click away. Due to COVID19, offline mode of the schools was closed and all the students and teachers were forced to start schools in the online mode. This conversion gave rise to evaluate difference in both the modes. Teachers and students in urban schools did not have any hindrance in online mode of the classes since they were fully equipped with all the paraphernalia required for giving and taking online classes. On the contrary, teachers and students of rural areas faced numerous problems because of limited resources.

LITERATURE REVIEW

As per Etienne and Van den Stock (2010) the key point which can give rise to the success and continuation of E- learning are interest and motivation of the teachers, free access to the tools, structure development, and the culture of using that education.

According to Adibi (2010), online education gives freedom to the students to learn from anywhere, anytime and according to the learner's pace which makes learners highly flexible. The researcher also added that in this mode the learner acts as a decision maker.

According to George (2009) the initial implementation of online learning is dependent on six words 'what, which, where, who, when and why' and has a belief that online education provides opportunities to students. Thus, all the aspects need to be studied before its implementation.

Johnson, Hornik and Salas (2007) brought some factors in the limelight which basically gives rise to the limitation in successful establishment of online learning, one could be non acceptance by the learner, learner is not fluent in using computer and stress while the learner is in the online learning environment.

As per Chou, Peng and Chang (2010) there are numerous active interactions that take place when a learner is indulged in online learning: learner- self, learner- instructor, learner- learner, learner- content and learner interface. Learning activities is an amalgamation of forms of interaction between the taught subject and the learning activities which includes: student- content, student- instructor, and student- student interaction.

According to Eom, Wen and Ashill (2006) there is no relation between all the other forms of interaction to the learning outcomes of the students. Researches that took place earlier found out that interactive activities online when the student is coming across blended learning course have an impact on student learning outcomes.

Noesgaarrrd and Orngreen (2003) highlighted some of the factors that will boost the efficiency of online learning. These factors are divided on the basis of the context in which online learning solutions are used, the artefact and the individuals who used the artefact.

Elfaki, Ahmed and Abdelrahim (2019) found that there is a positive influence of online learning on students rather than face to face discussions. They believe that online learning offers precious opportunity.

OBJECTIVE

- To compare the quality of learning through online and offline mode of teaching.
- To study the possibility of online instead of offline mode of teaching.
- To compare the level of reception and retention in learning in online and offline mode of teaching.

To find the statistically reliable answer to the above questions, the following hypothesis were formed and tested in the study.

- The quality of teaching is different in online and offline mode of teaching.
- Online teaching cannot replace offline teaching.
- The level of reception and retention in learning is different in online and offline mode of teaching.

RESEARCH METHODOLOGY

The focus of the study is to identify effectiveness of online classes and this can be further implemented in the society. This study is experimental because random method has been used to choose the variables since the finding of the study are obtained by modification of data and have some implication for the future thus, it is also a prospective research. We are using empirical, prospective and experimental research methodology in the study.

SAMPLE COLLECTION

We identified 40 students from different schools located in the rural areas of NCR in between the standard of 9th to 12th class. Identified students were asked questions at the time of online classes. Questions were again asked to them after the commencement of offline mode of classes. The duration of the study was from July to Dec 2020.

DATA COLLECTION METHOD

The instrument of data collection in the study consist one test covering 10 questions with multiple choices. The author has developed the test by carefully studying different books on education measurement and evaluation.

METHODS OF DATA ANALYSIS

Both descriptive and inferential statistics were used. Mean score and standard deviation as a measure of variability were calculated and regarding the inferential statistics the t-test for the comparison of the mean score of independent group was conducted.

FINDINGS

The First Hypothesis (Ho)

The quality of teaching is same in online and offline mode of teaching

In the study of testing the first hypothesis, the obtained t-value is seen to be 2.022, which is statistically insignificant at 0.10 level with 29 df because the calculated significance level is more than the assumed level of significance as 1.699. This finding is interpreted as refusal of the H_0 hypothesis and quality of teaching is different in online and offline mode of teaching.(Table 1).

Table 1: The t-test for Comparison of the Means of Online Learning and Offline Learning about the First Hypothesis

	Online	Offline
Mean	5.4	5.575
Variance	1.887179487	1.942948718
Observations	30	30
t Critical two-tail	2.022690901	

The Second Hypothesis (H_0)

Online mode of teaching can be replaced by offline mode of teaching

In the study of testing the second hypothesis, the obtained t-value is seen to be 2.023, which is statistically insignificant at 0.10 level with 29 df. Because the calculated significance level is more than the assumed level of significance as 1.699, and this finding is interpreted that online teaching cannot be replaced with offline mode of teaching (Table 2).

Table 2: The t-test for Comparison of the Means of Online Learning and Offline Learning about the Second Hypothesis

	Variable 1	Variable 2
Mean	5.575	2.95
Variance	1.942948718	1.792307692
Observations	30	30
Pearson Correlation	-0.08038117	
t Critical two-tail	2.023690901	

The Third Hypothesis (H_0)

The level of reception and retention in learning is same in online and offline mode of teaching.

In the study of testing the third hypothesis, the obtained t-value is seen to be 2.024, which is statistically insignificant at 0.10 level with 29 df because the calculated significance level is more than the assumed level of significance as 1.699 so H_0 is rejected and this difference is due to superior mean score of the offline relative to the mean score of the online, this finding is interpreted as the reception and retention in learning is different between the online and offline mode of teaching (Table 3).

Table 3: The t-test for Comparison of the Means of Online Learning and Offline Learning about the Third Hypothesis

	Online	Offline
Mean	5.025641026	5.538461538
Variance	0.867746289	1.939271255
Observations	30	30
t Critical two-tail	2.024394147	

CONCLUSIONS

This research was carried out to get an insight about online learning. As per the findings, the quality of learning through offline mode of teaching is better as compared to online teachings in rural areas since students face numerous problems like: lack of electricity, limited resources, infrastructural deficiencies and unstable internet connection. Teachers in rural areas also face same problems. Also, it is not possible to depend completely on online instead of offline mode of teaching in rural areas because of above mentioned problems. The level of reception and retention in learning in offline mode of teaching is greater since students are comfortable with this mode and students of rural areas.

Researcher gives scope for new research in this area which is able to identify the requirements of online mode of learning in rural areas and also study the challenges associated with it. This study helps schools, students and teachers identify the scope of online learning and methodologies involved. Study also gives insight to industries to develop infrastructural requirements and suitable mobile apps for the smooth conduct of online mode of learning in rural areas.

REFERENCES

- [1] Aparicio, M.; Bacao, F.; Oliveira, T. An e-Learning Theoretical Framework. *J. Educ. Technol. Soc.* 2016, 19, 292–307.
- [2] Baras, J. S. (2000). Educational connoisseurship and critics. *Journal of General Education*, 4(2), 213-245.
- [3] Bradford, G.R. A relationship study of student satisfaction with learning online and cognitive load: Initial results. *Internet High. Educ.* 2011, 14, 217–226.
- [4] Bhuasiri, W.; Xaymoungkhoun, O.; Zo, H.; Rho, J.J.; Ciganek, A.P. Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty. *Comput. Educ.* 2012, 58, 843–855.
- [5] Boling, E.C.; Hough, M.; Krinsky, H.; Saleem, H.; Stevens, M. Cutting the distance in distance education: Perspectives on what promotes positive, online learning experiences. *Internet High. Educ.* 2012, 15, 118–126.
- [6] Cho, M.-H.; Kim, B.J. Students' self-regulation for interaction with others in online learning environments. *Internet High. Educ.* 2013, 17, 69–75.
- [7] Etienne, P. & van den Stock, A. (2010). E-learning-assistant: Situation-based learning in education. *Computer and Education Journal*, 39(3), 224–226.
- [8] Conole, G.; Oliver, M. *Contemporary Perspectives in e-Learning Research: Themes, Methods, and Impact on Practice; The Open and Flexible Learning Series*; Routledge: London, UK; New York, NY, USA, 2007; ISBN 978-0-415-39393-5.
- [9] Johnson, R., Hornik, S., & Salas, E. (2007). An empirical examination of factors contributing to the creation of successful e-learning environments. *International Journal of Human- Computer Studies*, 66(5), 356–369.

- [10] Lee, J.W. Online support service quality, online learning acceptance, and student satisfaction. *Internet High. Educ.* 2010, 13, 277–283.
- [11] Nafissi, M. (2004). *Strategies for ICT development*. Tehran: Danesh.
- [12] Nichols, M. (2003). A theory for e-learning. *Journal of Educational Technology & Society*, 6 (2). Available online: http://www.ifets.info/journals/6_2/1.html
- [13] Oncu, S.; Cakir, H. Research in online learning environments: Priorities and methodologies. *Comput. Educ.* 2011, 57, 1098–1108.
- [14] Rodrigues, H.; Almeida, F.; Figueiredo, V.; Lopes, S.L. Tracking e-learning through published papers: A systematic review. *Comput. Educ.* 2019, 136, 87–98.
- [15] Sangrà, A.; Vlachopoulos, D.; Cabrera, N. Building an inclusive definition of e-learning: An approach to the conceptual framework. *Int. Rev. Res. Open Distrib. Learn.* 2012, 13, 145–159.
- [16] Sun, J.C.-Y.; Rueda, R. Situational interest, computer self-efficacy and self-regulation: Their impact on student engagement in distance education. *Br. J. Educ. Technol.* 2012, 43, 191–204.
- [17] Zare, M.; Pahl, C.; Rahnama, H.; Nilashi, M.; Mardani, A.; Ibrahim, O.; Ahmadi, H. Multicriteria decision making approach in E-learning: A systematic review and classification. *Appl. Soft Comput.* 2016, 45, 108–128.

Tracing and Untangling the Triad: Globalization, (International) Migration and (Migrants') Labour Rights

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Abstract:

This paper is a humble attempt at understanding how globalization is affecting international migration, and how labour rights have evolved from/due to it. Thus, in this paper, the author aims to look at making some meaning out of this triad – globalization, migration, and labour rights. Migration has been in practice since the earliest stages of human existence, though the reasons may be as varied and changing over the period of decades. The fact of the matter remains that migration has been on the rise steadily. Globalization is one of the major reasons for migration – in search of a better life, better work, and better opportunities people migrate. Labour rights, accordingly, is being treated or modified differently. Globalization has undeniably raised migration – both at the regional level (urbanization) as well as within nations (e.g. brain drain from developing nations to developed nations). These create more complexity to the already complex world of looking at labour rights (especially for migrants). To conclude, it can be safely said that the effect of globalization is neither universalistic nor deterministic in nature, and thus its effect on labour market and rights are different across different countries. What is required is a nuanced approach, not forgetting to uphold the underlying universal human rights in general, and labour rights in particular.

Keywords: Globalization, Migration, International Migration, Migrants' Labour Rights

INTRODUCTION

Migration as a phenomenon has been prevalent since the earliest days of mankind. In fact, the earliest instances of human migration can be traced back to the Palaeolithic age, when humans moved to populate the world. In the modern day, post-colonialism and industrial revolution 3.0, there has been considerable migration happening (with ascending numbers year-on-year). The underlying want for migration has always been for sustenance and betterment of life, though the causes may be as varied as due to natural calamities, war, terrorism, urbanization, etc. Globalization is one of the causes for the same, especially international migration. For the purpose of this paper, migration is used interchangeably as with international migration. Increased migration

many a times is considered problematic, but it does lead to sustainable development. Local economic growth happens, especially for poor areas. Another aspect is the migrant workers role as caregivers for the ageing population. There is high demand for semi-skilled and unskilled workers, and seasonal agricultural workers.

The world is shrinking – with advancements in transportation and communication, economic and political alignments, as also environmental factors – the human population is growing closer. Globalization, by its very definition indicates cross-border flows and transnational networks. Frequent and multi-directional flow of people, culture and ideas has been occurring, creating the concept of ‘global village’ (McLuhan, 1962, 1964). The search for better employment opportunities, better lifestyles, a better life – is what drives people to migrate, especially from underdeveloped/ developing countries to developed (and often economically and politically more stable) countries.

It is a paradox, however, if one looks deeper. While in one hand unification, ease of business, overall advancements are occurring (globalization), on the other people are getting more alienated (polarization), the rich getting richer and the poor are getting poorer (capitalism). Globalization has undeniably raised migration – both at regional level (urbanization) as well as within nations (e.g. brain drain from developing nations to developed nations). These creates more complexity to the already complex world of looking at the human rights (especially for migrants).

Internationalization is an important by-product of globalization. Organizations vary in adapting based on their country of origin. At the legal immigration level, there are lots of areas which require critical in-depth analysis – be it global hiring, managing expatriates, international assignments, etc. Further, issues related to business ethics, mode of operation, ownership issues (SMEs, family-owned, NGOs) are another area to be focussed on. Thus, at organization level, impact of globalization can be researched at the micro level (concentrating on managing the expatriate) and the macro level (dealing with the relationship between expatriation policies and multinational strategies). (Dowling and Welch, 2004).

THE CONCEPTS: GLOBALIZATION, MIGRATION, LABOUR RIGHTS

GLOBALIZATION

Globalization is defined as “the spread of products, technology, information, and jobs across national borders and cultures. In economic terms, it describes an interdependence of nations around the globe fostered through free trade.”¹ The motives are idealistic as well as opportunistic, with equal number of authors/ scholars divided amongst the two approaches. It is a social, cultural, political, as well as legal phenomena, and as such is vast all-encompassing. Especially with the technological

¹ <https://www.investopedia.com/terms/g/globalization.asp>

advancements and shortening of distances, globalization has happened, and it has happened fast. Especially for developing nations like India and China, the impact has been manifolded. The germination of globalization as a concept can be traced back to Industrial revolution (early 19th century), when ease of business (trade) was facilitated by advancements in transportation (and communication channels).

However, post the World War I, this was stalled momentarily, as nations veered towards Protectionism, and this continued till the World War II and the Great Depression. A key milestone in the revival of globalization happened with the signing of NAFTA (North American Free Trade Agreement, 1993), pioneered by USA. At a world-wide level, governments have (tried) aligning towards a free trade system, with institution building (WTO – World Trade Organization, 1995 and EFTA – European Free Trade Association, 1960). These are based on the Ricardian Principle ('On the principles of political economy and taxation', Ricardo, 1817), wherein he contended the benefits of free trade – diversification, expansion, lowering of prices, and greater exploitation of home-grown resources (products, knowledge, skills). FTA (free trade agreement) is based on the principles of GATT (general agreement on tariff and trade, 1994). These can be bilateral (between two countries) as well as multi-lateral (between more than two countries). Examples of such FTAs existing today are NAFTA, CAFTA, etc. Those who speak of benefits of globalization vehemently state how developing countries gain (increased industrialization, cross-border training, greater diversification, technological advancements, economic expansion, and improved standards of living). However, those against globalization point out to the domino effect of more connected economies (2008 financial crisis). Additionally, wealth gets concentrated (neo-liberalism, they argue, is more of a veiled capitalism, with the rich getting richer, and the poor poorer). Smaller, indigenous companies get taken over (often hostile or otherwise, due to inability to compete with such big pockets) by the few corporate elites. It is also stated as the cause of polarization, and the 'economic squeezing of the middle class' (Bird and Kopp, 2019).

MIGRATION

The term migration was originally coined in ecology. It means "the large-scale movement of members of a species to a different environment."² The context in which it is discussed in this paper is essentially that of human migration, i.e., human beings moving away from their home country. This is defined as such "human migration is the movement of people from one place to another with the intentions of settling, permanently or temporarily at a new location (geographic region)."³ (Human) migration can be of two types – Voluntary (Economic or Labour migration, viz., migrant

² [https://en.wikipedia.org/wiki/Migration_\(ecology\)](https://en.wikipedia.org/wiki/Migration_(ecology))

³ https://en.wikipedia.org/wiki/Human_migration

worker), and Involuntary (fleeing political/natural disaster: forced displacement (slave trading, trafficking, deportation, etc.) /Asylum seeker (ethnic cleansing, wars, etc.)). It is interesting to note the various terms used in relation to human migration. These are listed below:

- i. Immigration – inward migration (international)
- ii. Emigration – outward migration (international)
- iii. Economic migrant – someone who moved for seeking employment or betterment of life
- iv. Migrant worker – migrating within or outside home country for work
- v. Foreign/ guest worker – one who works outside his/ her home country, invited or sent
- vi. Refugee – forced to cross national borders, not safe to return to home country (fear or persecution)
- vii. Forced displacement – coerced movement away from home country or region
- viii. Asylum seeker – forced to flee home country for international protection (can be refugee or forced displaced, but not economic migrant)

As of 2019, UN estimates that the global number of international migrants is 272 million.⁴ Over the last decade (2010 till 2019), there has been an increase of 51 million international migrants. This increase is at a faster rate than the population growth of the world, with increased forced displacement. In 2019, India as country of origin, had the highest number of migrants (17.5 million), followed by Mexico (11.8 million), China (10.7 million), Russian Federation (10.5 million), and Syrian Arab Republic (8.2 million). Interestingly, the concentration as destination country has been restricted to just 20 countries in number. USA hosted the highest migrants (51 million), followed by Germany and Saudi Arabia (13 million each), Russian Federation (11 million) and UK (10 million).

In the Upper Paleolithic age, when humans started migrated from small pockets to further, more suitable areas across the world, with the idea of populating the world. Subsequently, in Neolithic age, it continued with populating the remote regions (and also by conquests). This was followed by Colonialism, done with the aim of economic dominance (Rodney, 1972). Some authors are of the opinion that colonialism is closely related to imperialism, with imperialism being the concept and colonialism being the practice (Young, 2015). In the modern era (post-colonial), industrialization has been the major reason of human migration – the most being labour migrants, refugee migrants, and the post-hoc effect of urbanization. Srivastava (2019), looked

⁴ https://www.un.org/development/desa/population/migration/publications/migrationreport/docs/MigrationStock2019_TenKeyFindings.pdf

at how migration impacted labour market in the Indian context. He studied the informally employed sector, and explored how informalization, migration, and social discrimination contributed to well-being deficits and increased inequality in the labour market (gender-biased employment, seasonal migration, cyclical migration).

In the same context, immigration is considered as migration, i.e., people crossing national borders – international migration). This article is focused majorly on the immigration aspect. Immigration can be legal, i.e., controlled or illegal (uncontrolled/violation of laws due to war, environmental disasters, etc.).

Impact of Colonialism

Colonialism has had immense and pervasive impact on the history of humans. Marx viewed it in the context of the historical development of capitalism (mentioning India, China, and Ireland) (Marx and Engels, 1848). He stated that colonialism and imperialism had a direct and important role in the development of capitalistic (global) economy (Young, 2016).

There have been immediate as well as prolonged effects of colonialism, which includes negative ones like spreading of diseases, imbalanced social relations, slavery, exploitation, detribalization, as well as some positive ones like institution-creation, abolitionism, improvements in infrastructure (in the colonized world), technological progress. The effect of colonialism on spreading of languages, literature and culture cannot be denied, though many a times this came at the cost of suppressing the native cultures and practices. Especially the British colonial countries still have English as their major language for working (started off forcefully, but then even after independence could not be discarded completely).

Impact of Environmental Disasters

Environmental disasters have been the cause of migration since the inception of mankind as a race. However, there is no simple relationship between the two. The extent of migration in a disaster scenario is complex, can be strong, moderate or even negative. It depends more on the type of disaster, and short-term or longterm perspective. As per the Annual Disasters and Statistical Review 2018 (Guha-Sapir, 2018),⁵ 281 climate-related and geophysical events were recorded in EM-DAT (international disaster database). These are listed below:

- Droughts & Extreme Temperatures (39 Events)
- Earthquakes & Tsunamis (20 Events)
- Floods (108 Events)
- Storms (84 Events)

⁵<https://www.emdat.be/publications>

- Volcanic Activity (7 Events)
- Wildfires (9 Events)

LABOUR RIGHTS

Labour rights are basically legal and human rights pertaining to guide the relationship between workers and employers. These are codified in national and international labour laws. The right to organize is taken as a core labour rights issue. Other issues related to labour rights are – working hour limits, child labour, workplace conditions, safety and social sustainability, living wage, migrant workers, and undocumented workers.

In order to understand the context of labour rights, I feel it is pertinent to briefly understand the broader perspective of human rights, within which labour rights are covered.

Human Rights

The United Nations is the torchbearer of Human Rights for the whole world. The origin can be traced back to 539 B.C., when Cyrus the Great freed all slaves and established racial equality. Preserved as Cyrus Cylinder, the enactments are adapted in the first 4 articles of the Universal Declaration of Human Rights. Another important mile stone was the Magna Carta of 1215, accepted by King John of England. This covered principles of equality before law, as well as rights for widows.

⁶The United Nations was formally established in 1945, after the World War II, wherein fifty countries united, partly as a response to the atrocities committed (Holocaust, etc.), in order to bring in universal human, economic, civil, and social rights. In 1948, the Universal Declaration of Human Rights (UDHR) was formally made, consisting of 30 articles, the first stating the fact that “...all humans beings are born free and equal in dignity and rights.”⁶ This was the base for the International Bill of Human Rights (completed 1966, and w.e.f. 1976). Articles 6, 7 and 8 of the UDHR

In this globalised world, new kinds of violations have started (modern day slavery). The Ruggie Principles (created 2008, base pillars: protect, respect and remedy)⁷ with the aim to eradicate such violations (viz., trade-union’s curbing, forced labour). The State must protect the communities (safeguard them against adverse effects of business), businesses must respect human rights, and the last pillar is about remedy towards any damage caused on violation of the above two pillars.

Brief History of Labour Rights and the ILO

Labour Rights as a concept can be traced back to the middle ages (Peasants’ Revolt, England, demanding for better wages and working conditions). The Factory Act (1833, British Parliament) was one of the earliest instances of a law passed to safeguard against child labour and their working hours. The first name which comes to mind

⁶https://en.wikipedia.org/wiki/Universal_Declaration_of_Human_Rights

⁷<https://www.activesustainability.com/sustainable-development/what-are-ruggie-principles/>

is that of Karl Marx, whose philosophy was focussed on labour issues, and solving social issues & economic conditions through social movements, best summed up by the phrase “Workers’ of the World, Unite!” (Marx and Engels, 1848).

The International Labour Organization (ILO) was formed in 1919 as part of the League of Nations to protect worker’s rights. It later became a part of the United Nations in 1946. There are 187 member states as of today. In its website, ILO states its mission as “The main aims of the ILO are to promote rights at work, encourage decent employment opportunities, enhance social protection and strengthen dialogue on work-related issues.”⁸

The core labour standards, identified by the ILO in the ‘Declaration of Fundamental Principles and Rights at Work’ are:

- *Freedom of association* (worker is free to join trade union without any influence, be it of the government and/or the employer(s))
- *The right to collective bargaining* (workers may negotiate with the employer as a collective entity, rather than individual level)
- *The prohibition of all forms of forced labour* (includes any form of slavery, work under duress, prison labour)
- *Elimination of the worst forms of child labour* (minimum working age and working conditions for children)
- *Non-discrimination in employment* (equal pay for equal work)

However, very few member countries have actually ratified all of the above conventions. Many reasons have been cited for this, including protection of local population (jobs, wages), borders (illegal migration), economic well-being, etc. as it is not imposable, these have remained at a superficial level only.

GLOBALIZATION AND MIGRATION

Beaverstock and Boardwell (2000), based on their analysis of official data on migration, established the ‘importance of migration as a globalization tendency’. Castles (2006), spoke about two models of migration of late 20th century. The first is the Settler Model (gradual integration of immigrants into the destination country, over generations) and the second is The Temporary Migration Model (limited period stay, more affiliation to the country of origin than the host country). He found, through case studies (Asian and European countries) that cultural transformation occurs, and blurring of boundaries happen within immigrants (of same host country) too. Thus, multi-layered citizens, multi-layered cultures are created, requiring diverse approaches in treating them accordingly.

⁸ <https://www.ilo.org/global/about-the-ilo/lang--en/index.htm>

Czaika and Haas (2014), analysed the global migration patterns over four decades (1960-2000). They found that from destination country perspective, migration has changed to become more globalised, but from origin country perspective, there hasn't been any notable differences.

GLOBALIZATION AND LABOUR RIGHTS

Stone (2006) in her article showed how globalization, privatization and flexibilization were the three key challenges to labour rights of this age. She studied from the perspective of US (host country), and found how this was detrimental to US employment and union strength. Adverse effect of globalization on unskilled workers (Rodrik, 1997) has been monitored critically. In fact, Rowley and Benson, in their Book 'Globalization and Labour in the Asia Pacific Region' (2000), mentions that globalization raises the following labour issues :

- Effect on wages, job security, conditions and work patterns
- Problems of cheap labour (import), deskilling, control patterns, subordination
- Attempts of national economies to control the above (success/ failure)
- Strategies adopted by trade unions
- Level at which workers should act
- How to mobilize workers, while maintaining solidarity (all across)

also, the impact globalization has on labour markets can neither be denied nor ignored. In the Asia Pacific region, countries behaved differently to address the above issues. For instance, India, post 1990s liberalization, had opened up its economy for MNCs and world market – flooding in both the positives and negatives of globalization. Whereas some sectors have benefited tremendously (IT, ITES, KP, services), there have been others which have died/ become ailing. One thing in common has been capital-labour asymmetry. Labour has mostly lost its power in the wake of globalization, as bargaining position of labour was impacted by this capital mobility.

Blanton and Blanton (2016), in their study, looked at the social, political integration and economic impact of globalization and their influence on collective labour rights (1986-2002). They found that all three were negatively related to labour rights, with affecting labour practices rather than the existing labour laws.

To conclude, it can be safely said that effect of globalization is neither universalistic nor deterministic in nature, and thus its effect on labour market and rights are different across different countries.

Migration and Labour Rights

The Labour Rights which cover migration are given as under: “...

- **Migration for Employment Convention (Revised), 1949 (No. 97)** - [ratifications] Requires ratifying states to facilitate international migration for

employment by establishing and maintaining a free assistance and information service for migrant workers and taking measures against misleading propaganda relating to emigration and immigration. Includes provisions on appropriate medical services for migrant workers and the transfer of earnings and savings. States have to apply treatment no less favorable than that which applies to their own nationals in respect to a number of matters, including conditions of employment, freedom of association and social security.

- Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143) - [ratifications]

Provides for measures to combat clandestine and illegal migration while at the same time setting forth the general obligation to respect the basic human rights of all migrant workers. It also extends the scope of equality between legally resident migrant workers and national workers beyond the provisions of the 1949 Convention to ensure equality of opportunity and treatment in respect of employment and occupation, social security, trade union and cultural rights, and individual and collective freedoms for persons who as migrant workers or as members of their families are lawfully within a ratifying state's territory. Calls upon ratifying states to facilitate the reunification of families of migrant workers legally residing in their territory.”⁹

As of date, the list of up-to-date instruments are:

- ◇ C097 - Migration for Employment Convention (Revised), 1949 (No. 97)
- ◇ R086 - Migration for Employment Recommendation (Revised), 1949 (No. 86)
- ◇ C143 - Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143)
- ◇ R151 - Migrant Workers Recommendation, 1975 (No. 151)

As of date, the list of instruments with interim status are:

- ◇ R100 - Protection of Migrant Workers (Underdeveloped Countries) Recommendation, 1955 (No. 100)

However, in the real life, the practical scenario is that in general labour unions are hesitant, unwelcoming, and even sometimes hostile towards immigrant workers. The need to protect their own (that is, localized people) overrides the rights of the others. To add to it, just being a part of a union not necessarily address all the needs of such workers. Hence, such workers often are found to move beyond unions and mobilize on their own, campaigning within their communities on issues of discrimination, etc. (Bacon, 2007).

⁹ <https://www.ilo.org/global/standards/subjects-covered-by-international-labour-standards/migrantworkers/lang-en/index.htm>

GLOBALISATION, INTERNATIONAL MIGRATION AND LABOUR RIGHTS: INTEGRATING THE TRIAD

Selwyn, in his book “The Struggle for Development”, argues that the developing countries’ impositions, international structures, and impositions actually increased poverty in the developing/ developed nations. This is due to exploitation (cost-benefits), and thus he argues that ‘global value chains’ are in reality, ‘global poverty chains’ (anti-poverty consensus). Notably, economist Amartya Sen, in his book “Development as Freedom” (1999), argues that freedom is the be-all, end-all for economic development: sustainability and welfare for the entire world. He speaks about individual freedom, without any association, be it of any nature: historical, political, religious, etc. The freedom to participate in capitalist markets (essential component of globalisation and free trade), is touted by him as a means to alleviate global poverty. In another book, looking at development through economic growth (perspective of the owners to speak) written by strategist C.K. Prahalad (The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits, 2009), he argued that the fastest growing market in the world is that in the bottom rung (poorest). Hence, by understanding and addressing this segments’ needs, economic mobility, corporate growth and profit can successfully be achieved, which in turn will lead to societal development in those nations too. This, in fact, is staunch supporter of the neo-liberalistic developmental theory (focussing on capitalistic economic and societal growth).

Wicramasekara (2008), looks critically into the effect of globalisation on international labour migration and their rights. He observes that major cause of the developmental gap, and the problems of migration is due to the closed-door policy followed by host countries:

- Denial of labour demand
- Channelling a large part of flows to irregular migration
- Consequent exploitation and violation of rights of migrant workers
- Accelerated brain drain from developing countries
- Gains from migration and protection of migrant rights are inseparable
- Policy challenge is to maximize the positive aspects of migration while minimizing the negative aspects

He further goes on to state that the challenges associated with current migration patterns and trends are –

- Rampant abuse and exploitation of migrant workers; growth of irregular migration (trafficking, smuggling)
- Limited avenues for migration of low-skilled workers
- Poor integration in host societies

- Growing racism and xenophobia
- Lack of credible migration policies, and
- Poor ratification of, and compliance of international normative standards

He further argues that irregular migration is in reality a by-product of the selective migration policies followed by developed countries. In fact, illegal work is on the rise, and closed-door policy leads to accentuate it (strong demand for low-skilled workers) and, this, in turn, leads to violation of human and labour rights. It is often that the host countries fail to recognize that all have fundamental human rights, an unfortunate bitter truth.

McGovern (2007), in his review essay, argues along a different line. He argues that immigration, in fact, brings to attention the institutional nature of labour markets and the rights therein. He acknowledges the impact of migrant workers' availability on the wages of native workers. He raises the question as to why unionization is not that prominent (or rather, how unions treated migrant workers with suspicion).

Nshimbi and Mayo (2016), in their study on European Union and Africa relationships on migration issues, observed that the policies followed in EU against immigrants, viz., 'militarisation, securitisation, restrictive and, sometimes, draconian immigration regimes' in reality do nothing to address the migration crisis.

LIMITATIONS & FUTURE SCOPE

The arena, the triad itself is so vast that it was not possible to capture all the nuances within the limited scope of this article. It was interesting to observe the effect of various factors, which leads to migration historically, like colonialism. While efforts have been put to place a brief idea about the reasons, treating of the subject matter, in my opinion, is actually a broader topic, warranting a separate article by itself. In addition, even treating two of the three (globalization, migration, and labour rights) each demands in-depth analysis, and hence separate articles by themselves. The idea of this paper was to give the readers a general idea about the causes and underlying assumptions. Further work is necessary as well as welcome to make the linkages more explicit, and hence, can definitely be area of interest for future researchers. Lastly, though it can be safely said that effect of globalization is neither universalistic nor deterministic in nature, and thus its effect on labour market and rights are different across different countries, a deeper study of this effect is outside the purview of this paper. This can be treated as a separate research area of interest altogether.

REFERENCES

- [1] Marx, Karl & Engels, Friedrich. (1848). *The Communist Manifesto*.
- [2] Marshall McLuhan Predicts the Global Village (*The Gutenberg Galaxy*, 1962), and *Understanding Media* (1964)). Retrieved from https://livinginternet.com/i/i_mcluhan.htm on 30th November 2019

- [3] Rodney, W. (1972). How Europe underdeveloped Africa. Black Classic Press
- [4] Rodrik, D. (1997). What drives employment? Retrieved from <https://ideas.repec.org/cgi-bin/hsearch?q=What+Drives+Public+Employment%3F> on 25th November 2019
- [5] Sen, A. (1999). Development as Freedom. 1st edition. Anchor
- [6] Beaverstock, J.V. and Boardwell, J. T. (2000). Negotiating globalization, transnational corporations and global city financial centres in transient migration studies. *Applied Geography*, 20 (3), 277-304
- [7] Rowley, C. and Benson, J. (2000). Globalization and Labour in the Asia Pacific Region, Volume 6 of Asia Pacific business review, Issue 8 of Studies in Asia Pacific business, ISSN 1369-7153. Psychology Press
- [8] Tacoli, C. and Okali, D. (2001). The Links Between Migration, Globalisation and Sustainable Development. Published by IIED and RING. Retrieved from <https://pubs.iied.org/pdfs/11020IIED.pdf> on 30th November 2019
- [9] Castles, S. (2002), Migration and Community Formation under Conditions of Globalization. *International Migration Review*, (36), 1143-1168
- [10] Dowling, P. J. and Welch, D. E. (2004). *International Human Resource Management: Managing People in a Multinational Context*. 4th edition. New Delhi, New Delhi: Cengage Bacon, D. (2007). Rising from Below: Immigrant Workers Open New Organizing Fronts. *Race, Poverty & the Environment*. 14 (1), 21–27
- [11] McGovern, P. (2007). Immigration, Labour Markets and Employment Relations: Problems and Prospects. *British Journal of Industrial Relations*, 45(2), 217–235
- [12] Wicramasekara, P. (2008). Globalisation, International Labour Migration and the Rights of Migrant Workers. *Third World Quarterly*, 29(7): 1247–1264
- [13] Prahalad, C.K. (2009). The Fortune at the bottom of the Pyramid: Eradicating Poverty through Profits. 1st Edition, FT Press
- [14] King, R. (2010). *People on the Move: An Atlas of Migration*. Berkeley, Los Angeles: University of California Press
- [15] Mohapatra, S.; Joseph, G. & Ratha, D. (2012). Remittances and natural disasters: expost response and contribution to ex-ante preparedness. *Environment, Development and Sustainability*, 14(3), 365-387
- [16] Czaika, M. and de Haas, H. (2014). The Globalization of Migration: Has the World Become More Migratory? *International Migration Review*, 48, 283-323
- [17] Young, R.J.C. (2015). *Empire, Colony, Postcolony*. Oxford and Malden, Mass: Wiley-Blackwell
- [18] Blanton, R., & Blanton, S. L. (2016). Globalization and Collective Labor Rights. *Sociological Forum*, 31(1), 181–202
- [19] Nshimbi, C. and Moyo, I. (2016). Visible and invisible bordering practices. *World Journal of Science, Technology and Sustainable Development*, 13(4), 300-314
- [20] Young, R.J.C. (2016). *Postcolonialism: An Historical Introduction*, Anniversary Edition. John Wiley & Sons
- [21] Selwyn, B. (2017). *The Struggle for Development*. 1st Ed. Cambridge, UK: Polity Reviewed by Bird B. and Kopp C. (2019). Globalisation. Retrieved from <https://www.investopedia.com/terms/g/globalization.asp> on 24th November 2019
- [22] Srivastava, R. (2019). Emerging Dynamics of Labour Market Inequality in India: Migration, Informality, Segmentation and Social Discrimination. *The Indian Journal of Labour Economics*, 62, 147–171

Online Teaching and Learning Technologies

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Abstract:

The number of different e-learning technologies available to support teaching and learning is growing exponentially. A major issue for faculty and educational developers in higher education is to determine which e-learning technology is most appropriate to support their particular teaching needs and provide optimum learning opportunities for students. Using a qualitative content analysis approach, this study reviewed 47 published studies and research on online teaching and learning since 2008, primarily focusing on how theories, practices and assessments apply to the online learning environment. The purpose of this paper is to provide practical suggestions for those who are planning to develop online courses so that they can make informed decisions in the implementation process. Online education in its various modes has been growing steadily worldwide due to the confluence of new technologies, global adoption of the Internet, and intensifying demand for a workforce trained periodically for the ever-evolving digital economy. Online education is on track to become mainstream by 2025. This editorial documents country-level factors that impact quantity and quality of online education. Such factors include industry (business); governments at local, state, and federal levels; country laws; ICT capacity; Internet/mobile technology diffusion; and income and digital divide. We provide implications for country and world organizations concerning online education. In doing this, it is hoped that this will stimulate an on-going discussion of effective strategies that can enhance universities and faculty success in transitioning to teach online. Under current debates on the cost and quality of higher education, this study could help for the improvement of higher education and student enrolment and retention.

Keywords: Online Education, Online Teaching, Online Learning Community, Asynchronous Learning, Cognitive Presence, Social Presence, Teaching Presence.

INTRODUCTION

A decade ago, it was common to hear that “online learning is the future!” Indeed, it became the future and is now very much the present, but our idea of what online learning should be has changed dramatically over those ten years. Educators are now at a point where they have revised what effective online learning means, discarding the early passive, consumption-oriented model for one that is far more engaging and interactive. This two-part workshop offers a hands-on introduction to online learning.

Part I provides a general overview of online teaching, course design best practices, common myths and mistakes, and questions for any newcomer to consider. Attendees will leave Part I with an assignment which they will complete and review as a group in Part II. Part II will also provide an opportunity to discuss further questions, concerns, and ideas for online teaching.

Education can become transformative when teachers and students synthesize information across subjects and experiences, critically weigh significantly different perspectives, and incorporate various inquiries. Educators are able to construct such possibilities by fostering critical learning spaces, in which students are encouraged to increase their capacities of analysis, imagination, critical synthesis, creative expression, self-awareness, and intentionality. A by-product of fostering such new approaches has been the creation of online courses developed in the United States and worldwide at exponential speed. It is becoming increasingly common at many higher education institutions, offering fully online and/or hybrid/blended courses combining online instruction with face-to-face teaching. Statistics done by the Pew Research Center (2011) show that in the 2010-11 academic year, 89 percent of four-year colleges and universities offered courses taught fully online, or hybrid/blended online, or other forms of distance/non-face-to-face instruction (Parker, Lenhart, & Moore, 2011). Of all students enrolled in higher education in 2013, 32 percent took at least one online course (Allen & Seaman, 2013).

The literature provides many definitions of eLearning since the term was first introduced in the late 1990s (Gerhard and Mayre 2002). Romiszowski (2004) counted more than 20 different definitions within 50 articles. In this study the comprehensive definition from Tavangarian, Leypold, Nölting, Röser and Voight's (2004) review of the literature has been adopted: E-learning is "all forms of electronic supported learning and teaching, which are procedural in character and aim to effect the construction of knowledge with reference to individual experience, practice and knowledge of the learner. Information and communication systems, whether networked or not, serve as specific media ...to implement the learning process" (p.274). Elearning then is supported by technology. Brewer, De Jonge and Stout (2001) suggest that: "Ideally, technology plays a transparent supporting role in the learning process ... appropriate integration of learning technologies casts technology in the background ... gratuitous and/or awkwardly or inappropriately employed learning technologies can actually juxtapose the role and importance of technology allowing it to compete with the learning process" (p. 39). Educators need to be well informed and familiar with the available technologies if they are to use them effectively for e-learning. However the number of different technologies available to educators continues to grow rapidly and technologies not originally considered as teaching tools (such as Facebook) are now permeating teaching and learning spaces. There are also growing expectations that educators are tech-savvy and familiar with a the wide range of technologies. These expectations have placed increasing pressure on educators (Orton Johnson 2009; Thinyane 2010).

WHAT IS ONLINE LEARNING?

Online learning is education that takes place over the Internet. It is often referred to as “eLearning” among other terms. However, online learning is just one type of “distance learning” - the umbrella term for any learning that takes place across distance and not in a traditional classroom. Distance learning has a long history and there are several types available today, including:

- **Correspondence Courses:** conducted through regular mail with little interaction.
- **Telecourses:** where content is delivered via radio or television broadcast.
- **CD-ROM Courses:** where the student interacts with static computer content.
- **Online Learning:** Internet-based courses offered synchronously and/or asynchronously.
- **Mobile Learning:** by means of devices such as cellular phones, PDAs and digital audio players (iPods, MP3 players).

By far the most popular approach today is online learning. According to the Sloan Consortium, online enrolments continue to grow at rates faster than for the broader student population and institutes of higher education expect the rate of growth to continue increasing. Some of the key findings:

- Over 1.9 million students were studying online in the fall of 2003.
- Schools expect the number of online students to grow to over 2.6 million by the fall of 2004.
- Schools expect online enrollment growth to accelerate — the expected average growth rate for online students for 2004 is 24.8%, up from 19.8% in 2003.
- The majority of all schools (53.6%) agree that online education is critical to their long-term strategy.
- A majority of academic leaders believe that online learning quality is already equal to or superior to face-to-face instruction. (The “no significant difference” phenomenon.)

THEORETICAL GROUNDING AND LITERATURE REVIEW

In conformance with the grounded theory method, we did not design a sampling strategy at the start of the study, but asked what type of data was needed at each stage to develop or validate emerging categories of analysis, or to explore gaps in the findings. We wanted to explore learner behavior when faced with novel concepts and ill-structured problems, so that we could understand how these behaviors might translate to other types of course and environment. All online courses available to us used the Blackboard learning environment, focusing on the presentation of course notes by means of annotated PowerPoint slides, Word documents, and PDF

readings. The discussion board used for all courses provided a threaded discussion forum, where students could post contributions to a class discussion that was guided by instructor questions or generated by student interest (for example, the instructor might post structured questions based on a course reading, or a student might post an open question or comment based on their insights or queries about a course topic or area of competency).

We decided to use the Grounded Theory Method (GTM) because we concluded that there were no extant theories to explain how socially-situated learning in asynchronous, online course communities takes place. The construction of theory using GTM relies on a systematic analysis of empirical data, to theorize about what is happening in that situation. The result is a theory that is grounded in evidence rather than developed from existing conceptual frameworks. “This is an inductive method of theory development. To make theoretical sense of so much diversity in his data, the analyst is forced to develop ideas on a level of generality higher in conceptual abstraction than the qualitative material being analyzed. He is forced to bring out underlying uniformities and diversities, and to use more abstract concepts to account for differences in the data” (Glaser and Strauss, 1967, pg. 114). GTM may be used to analyze qualitative and quantitative data, so its use permitted us to combine multiple types of data analysis in a “mixed methods” approach to theoretical sampling, as described below.

In the literature reviewed, a great number of studies have aimed at determining whether computer-mediated education in the form of e-learning, blended learning or hybrid learning is better than traditional face-to-face teaching in relation to, for instance, learning outcome and student satisfaction. Researchers, educators and educational decision makers alike are eager to find out which format leads to the best results for their students and the educational institutions. However, as we shall see below, comparative studies of educational formats show different results, which might indicate that factors other than the format alone influence learning outcome, satisfaction, student retention et cetera. In this review of the literature on e-learning, we present and discuss definitions of e-learning, hybrid learning and blended learning, and we review the literature comparing different online teaching formats with traditional on-campus/face-to-face teaching. With this point of departure, we explore which factors affect students’ learning experiences in different online formats in higher education, with particular emphasis on professional education and teacher training. The review serves to show that some factors are more prominent than others, and these factors, including spaces, learning community and student identity, course design and the educator’s role, are further discussed.

Shu-Sheng Liaw, in the research study on effectiveness of e-learning investigates the reason for dissatisfaction of some of the e-learning students. The research surveys 424 university students for their feedback on effectiveness of e-learning for them. The findings of the report suggest that the intention and study focus are the main factors

that influence the objectives and usefulness of e-learning. Personal efficiency for the coursework is also a determining factor for the outcomes (Shu-Sheng Liaw, 2008). The examination of effectiveness of e-learning is useful for not just the students but also for the trainers as it helps them in refining their methods of teaching. Regular testing of the outcomes of e-learning and efficiency of knowledge transfer guide the teachers to employ techniques that can be more effective in transferring the education. The technocrats are also interested in transforming the e-learning experiencing through effect ICT applications (CommLab, 2015).

E-learning has been used extensively not just for academic purposes for students but also for businesses and corporate employees to impart training on various upcoming industrial revisions (Judith B. Strother, 2002). E-learning has contributed to so many different fields such as medicine, health, businesses, industries and pharmacy.

A study conducted in Tehran Alzahra University by R. Safiyeh tried to investigate the relation between the e-learning and motivation for the students. The study uses questionnaire based survey and the university students as respondents, quantitative methods like person correlation was used to understand the survey findings and form a relationship between the dependent and independent variables for the research. The findings suggest that motivation of the students is affected by e-learning significantly. But the study has many limitations as it is based on a single university and uses no interviews; hence, the findings are not supported by corroborative evidence of face to face interviews or a global audience (Safiyeh R. Harandi, 2015).

Y. Levy, investigates a different aspect of e-learning for checking its effectiveness by considering reviews from the students. The research work takes into account the view of drop out students and compares them to the successful student. There is found to be a striking difference in their views as drop out find the e-learning as ineffective and useless. The study therefore establishes the fact that the intention, performance and individual approach make e-learning practices suitable for the students. However, the study does not comment on what additional factors are involved for students to drop out from the e-learning courses (Yair Levy, 2007).

Other than these, interactive videos are a major contributing factor that helps the students in analysis the subjects and evolve a deeper understanding of the study material. The 3D technology, various software and multi dimensional approach have convincingly made e-learning equivalent to the classroom studies, if not better (Dongsong Zhang *et al.*, 2006).

RESEARCH METHODOLOGY

The methodological approach of the research was qualitative and the main technique to collect and analyse data was content analysis from the literature review of papers on digital learning methodologies and tools. For this paper a bibliometric research was performed using b-on, which is a research resource that allows access to thousands

of scientific texts included in places such as Elsevier, ISI, Sage and Springer, among others. For the beginning of the segmentation, the terminology “Digital learning methodologies” was used as the initial filter, obtaining a total of 228,474 publications. Subsequently, new segmentations were used, limiting the number of articles: exclusive research of peer-reviewed scientific articles in academic publications (170,851 articles). With the introduction of the keywords higher education (2,123) and teaching methods (96), we obtain a smaller number of publications, which will set a total of 64 when the time horizon of research for the last 3 years is reduced (2014-2017). It also happens that the total viewing screen is configured for 30 items per page and, when changing pages to continue the analysis, the system ends up eliminating articles that may be repeated, setting the total number of articles to 54. After analysis, one of the articles had little relation to the keywords one was eliminated. The final analysis focuses on 53 articles.

DATA COLLECTION

Evaluation should be a data-driven process. When considering how teachers use and integrate technology or how students use technology to inspire and expand learning, it is important to have data which documents this activity. In this article, we will discuss several different data collection strategies which can support a technology evaluation effort.

Before we dive into a discussion of particular strategies, it makes sense to place data collection into the context of the evaluation and assessment initiatives it supports. It is our contention that meaningful program evaluation - for instance in the realm of digital learning -- is about examining the impact that digital learning tools have on teaching and student achievement. This impact cannot be measured simply by “counting devices” nor for that matter entirely by counting teachers or students who simply “use” their devices. Rather, we believe that impact is measured and documented through observation of a complex picture composed of teacher behavior, student work, attitudes, curriculum, and technology.

We have worked with school districts, educational organizations, and higher education institutions to develop authentic assessments of program impact that focus on teaching and learning. In virtually all cases, these assessments are rooted in the goals of a strategic plan such as a digital learning plan. Assuming that the plan goes beyond an outline for technical infrastructure and has a vision (and related goals) for programmatic impact in the classroom, it is possible to create descriptive indicators for the desired outcomes of the plan’s goals. These indicators form a framework for data collection. In this way, data collected is intended to confirm the achievement (or lack thereof) of specific indicators.

A full description of our evaluation process is available online. Sample focus group and interview questions can be found here. We also have sample surveys and classroom

observation protocols. A list of other online resources related to technology evaluation is found at the end of this article.

TYING DATA TO INDICATORS

Within the context of an evaluation effort, data collection makes use of tools and techniques such as surveys, observations, interviews/focus groups, review of teacher/student work, and public meetings. The point is to collect data which relates to the developed indicators. Data collection is designed in response to assessment rubrics developed by a district from their goals and objectives for technology. The point of data collection is to gather information which will enable the district to “answer” the evaluation questions and “score” their performance on their rubrics. Therefore, it is not possible to predict a data collection strategy without knowing something about a district’s evaluation rubrics.

For example, if an indicator of high achievement in teacher use of technology is that teachers will use technology to communicate with peers outside of the district, then data is needed which shows the amount as well as qualitative substance of teacher online communications. This might include technical logs (e.g., how often do teachers access their email accounts); teacher surveys to determine how often online communication is used and for what; and teacher interviews to determine the value placed upon virtual communication strategies. All of this quantitative and qualitative data is used to determine a level of overall achievement in the indicator rubric. A similar logic would be used to measure achievement with any set of indicators.

We have found a variety of tools useful for technology evaluation data collection.

Surveys

Surveys can be of teachers, administrators, students, and/or community members. Unique surveys can be created for each target population. Survey formats can be secure online or hardcopy. We have found considerable advantage in using online surveys in that they often end up being easier for respondents. Online surveys produce immediate machine-readable data (without additional data processing). Regardless of whether a survey is online or hardcopy, we have found that providing a common, dedicated, time for respondents to complete their surveys is important. Many of our clients dedicate 10 minutes at the beginning of a faculty meeting to completing an annual survey. One thing that is clear is that the “in your mailbox, return it to the Principal’s office” paper survey is guaranteed to produce low response rates.

Focus Group Interviews

As with surveys, a district can choose to collect more or less data by scheduling more or fewer focus groups. Typically, we interview teachers -- one group at each school -- administrators, and technology staff.

Classroom Observations

Our team of external evaluators typically spends time in schools and classrooms throughout the district. Our goal is not to only observe teachers and students using technology. Rather, we find that we can learn much about how technology is being used to impact teaching and learning just by observing classroom setups, teaching styles, and student behaviors. The observation techniques we employ can certainly be implemented by an internal staff evaluation team.

Artifact Analysis

Our team will develop an assessment protocol of student technology work. This assessment will focus on an examination of how students at a variety of different grade levels and subject areas have used technology to enrich content-area (curriculum) learning. We will work with the evaluation committee and school administrators to develop an accurate sample of student work for this assessment.

Here, it is worth mentioning that while data collection might take place at the individual level of performance, individual data it should never be reported. The mission of a district-wide evaluation is to determine the progress of the district as a group of individuals in meeting its goals. Nothing will undermine an evaluation project faster than the perception that it is measuring or ranking individuals. If individual assessments are important, these should be developed and administered separate from your district technology evaluation.

Other data collection strategies and mechanisms can be deployed. For example, some districts have found success with a “public meeting” format where Sun Associates facilitates (and documents) a discussion about a community’s goals, aspirations, and concerns. As a cost-saving strategy -- particularly in larger districts -- we can work with in-district evaluators to adapt and deploy existing data collection mechanisms and/or to identify statistically relevant sample populations so as create a more manageable data collection effort.

MEASUREMENT SCALES

Although there are several studies focused on online teaching strategies and technological innovations, they seem to have ignored a relatively important detail regarding the readiness of students to learning [1]. Moreover, some studies have shown that most students are not prepared for the virtual learning environment. Despite the existence of literature on e-learning readiness, some authors of existing tools and others have strongly recommended in future research to proceed firstly to improve the internal and external validity of these tools, and secondly, to take into account other dimensions [1]. According to these authors, the development of an e-learning readiness instrument is highly desirable to identify risk students in the virtual learning environment. The authors add that this instrument can identify early students who have difficulties taking online courses. It is felt that a better knowledge

of e-learning and better preparation before taking online courses allow learners to be able to perform better and to continue their study with this mode of teaching. It therefore seems important that there is some assessment of the preparedness of a learner before taking online courses.

Demographic Profile of Respondents

The increasing prevalence of new technologies in our daily lives has affected most of socio-economic activities. This is partly because over the past decade, electronic learning resources (e-learning) systems has drastically changed our beliefs, value, culture, religion and entire way of life. Thus, most relatively affected areas include commerce and industry, manufacturing process, social and education systems. It is obvious that in attempting to keep abreast with some of the new advances, acceptance and applications of these newly discovered technologies to teaching and learning has become imperative. Philip (2003) opined that organizational ability to learn and subsequent applications of learnt concepts could determine its survival, progress, development and proper ranking of institutions in the world-wide global competitive markets. This type of growth in part could be dependent upon ability to quick response to changes and adaptation to new-found technology. The placement can be achieved through appropriate training of staff by use of appropriate information and communication technology (ICT) support system in teaching-learning. Bandele (2006) opined that e-learning library resource is a revolution that involves the use of tools such as computers, internet and other telecommunication technology in every aspect of human endeavour. Ofodu (2007) defined e-learning as electronic or computerized learning-devices that assist human and other interactive materials for a wide range of teaching and learning, and for public or personal uses. Consequently, there has been a suggestion achieved by applying hierarchy of needs for the ICT integrations to teaching and learning in most educational systems. A well designed and constructed guide to the education and school authorities will definitely assist in planning and decision making process. Alexander (1998), Okebukola (2005) and Johnson (2007), stressed the fact that the traditional methods of managing education and transmitting knowledge and skills are rapidly becoming inadequate to deal with the accelerated changes in the educational system. They suggested that effective use of the wide writing facilities offered by ICT opens up unprecedented opportunities for researchers who agreed that e-learning resources-revolution is centered upon the main use of internet, computers and telecommunication technologies. In most aspect of societal and human activities, Bandele (2006), Jimoh (2007) and Ofodu (2007) opined that the application of internet system is increasing. The systems are regarded as electronic super-high-way through which information can be transmitted, shared and applied for the benefit of mankind as earlier stated. The merits of the systems include fast processing time, huge handling capacity, and variety of information processing methods, well organized learning and teaching process that suites the current generation of learners, precision and accuracy.

Empirical Analysis

Distance education has been a part of the educational system in the United States for centuries, and can be traced back to the 18th century. Early changes in curricula involved Benjamin Franklin and his efforts to expand the curriculum of a Latin grammar school to include history, science, and modern languages (Verduin, 1967). Franklin began to think creatively regarding ways to incorporate such subjects into the curriculum and, since then, a great variety of distance education methods have been utilized. The research problem here is the growing concerns about learning, quality of learning, and efficacy of the distance education. In recent years, higher education academic institutions have increased the number of online courses offered to students. There exists, therefore, the need to better understand the effectiveness of online education. The efficacy of distance education programs can be studied in various ways. The purpose of this quantitative study is to identify the factors that are influential in determining student satisfaction of overall course effectiveness and student satisfaction of overall instructor effectiveness in Connecticut online higher education.

Testing the Assumptions of Structural Equation Modelling

The internet is one of the most important technologies effectively used in almost every area of human life today, primarily in education. The internet is used for distance education applications as a complete learning setting as well as for supporting face-to-face learning activities. Online learning stands out among distance education applications via the internet. Online learning is an important tendency in education (Cobb, 2009). In fact, the total number of students who have participated in online learning activities at least once has reached 6.7 million across the world according to data from 2011 (Allen & Seaman, 2012). The majority of these students have continued online learning at the university level. In Turkey, over 1 million higher education students have participated in online learning activities according to TÜİK data from 2012. Many academic leaders state that online learning is as effective as face-to-face learning qualitatively and quantitatively (Allen & Seaman, 2012). Opportunities presented through online learning are one of the basic reasons for the widespread use of online learning. It is possible to access the content of online learning anytime. The content provides access to up-to-date information since it can be updated easily. It can offer interaction and communication either synchronously or asynchronously with the people who participate in its presentation or the system (DemirKaymak&Horzum, 2013). In online learning students are not passive but active. This activeness enables them to acquire learning experiences in depth, whereby they can develop thinking skills and identify, access, and use information sources more easily (Horton, 2000). Among the advantages presented by online learning is that it centers the students and enables them to study at their own pace (Simonson, Smaldino, Albright, & Zvacek, 2006). Aside from this, it also helps students cooperate, interact, and communicate

actively and intellectually with the content, the institution, the instructors, and other students (Moore & Kearsley, 2012). Online learning provides an opportunity for students to cooperatively learn. The process of cooperative learning helps students with the development of high-level thinking skills (Archer, Garrison, & Anderson, 1999). Students can also access information easily and complete online programs from wherever they are, such as at the workplace, through online learning (Ally, 2008). Whole content can be offered via the internet in online learning. Face-to-face activities are not included in online learning (Allen & Seaman, 2012). In this sense, online learning is a much more different experience than the educational practices in which many students have had in the past.

Confirmation Factor Analysis

The Florida Online Reading Professional Development (FOR-PD) is a nationally recognized reading professional development project designed to assist pre- and in-service teachers in K-12 education to improve their knowledge and understanding of scientifically-based reading research and instructional practices. Initiated in 2002, FOR-PD has educated nearly 45,000 teachers, administrators, and other educators. FOR-PD crosses two educational contexts, professional development and K-12 education, and its students are certified and practicing, K-12 teachers, as well as university and community college students taking the course as a component of teacher certification programs or graduate studies. FOR-PD instructors (also known as facilitators) are also experienced K-12 teachers with professional records as literacy leaders in the classroom. Facilitators are selected through an application process and/or recommended by their school district and receive a seven-week online certification course as well as ongoing professional development related to effective online facilitation. FOR-PD offers its online course in open enrollment, district, community college, and university sections. Because the goal of the current research is to test the use of the TPS in a professional development setting removed from higher education, the study was limited to open enrollment and district course sections.

The student satisfaction instrument which sought to measure students' overall course satisfaction included 24 items. The first five items asked for basic information about the participant's experience (i.e., whether they completed the course, whether they had enrolled via their school district or open enrollment, why they enrolled in FOR-PD, whether it was their first attempt at FOR-PD, and what they thought of the pace of the course). The following seven items asked participants to rate the course on dimensions such as the content's ability to help meet their classroom needs and increase their knowledge of scientifically-based reading research, the ease of navigation through the course, appropriateness of the length of assignments and of the course itself, the helpfulness of course content tools in facilitating classroom implementation of reading strategies, and the amount of comfort respondents gained in using the reading strategies taught throughout the course. These were all measured using a five point

Likert scale (strongly agree to strongly disagree). The next set of ten items asked respondents to rate their facilitator along dimensions such as feedback provided, interest in participants' learning, assessment of participants' progress, expression of expectations for performance, availability to assist students, promptness of responses in online discussions, promptness of responses via email or course mail, respect and concern for students, facilitation of learning, and overall assessment of facilitator's effectiveness.

Model Fit Indices

The digitization of identity and global networked system, with the ubiquitous computing applications, particularly high quality electronic data creation and maintenance, reveals that common networking concepts are widely found across a range of domains (Hansen, Shneiderman, & Smith, 2010; Pentland, 2016). Online Social Network (OSN) is a contemporary type of internet phenomenon where everyone and everything is connected. In today's society, social media is a term that everyone knows and all households with youngsters having access to the internet are familiar with multiple social media platforms exist currently. Recent years have witnessed a phenomenal proliferation and widespread use of social media platforms among a large population (Amichai-Hamburger & Vinitzky, 2010; Chae, 2018; Choi & Sung, 2018; Rodriguez & Keane, 2018). It is estimated that more than 3 billion people around the world (around 40% of the world's population) use online social media.

Moderating Effects

Learning management systems (LMS) provide higher education institutions with various functionalities, including knowledge sharing, content management, discussion boards, learners' interaction and online assessment. In spite of these features, the effectiveness of LMS is dependent on the students' use, and the advantage of its adoption is minimized if it is not used [3]. Thus, the success of LMS begins with the students' acceptance, that in turn encourages them to use the system. Early studies in developing countries and Saudi Arabia concluded that the utilization of LMS is still not within its full potential. Studies have found that students use only some of LMS functions, and LMS, in most cases, are utilized for only storing and downloading documents. In terms of theory, the technology acceptance model (TAM) that determines behavioral intention to use a computer system has been cited more than 40,000 times (see Figure 1). However, TAM has also been criticized for not including moderating variables. The impact of the moderating effect on technology acceptance has been emphasized by researchers. Venkatesh *et al.* examined eight models and demonstrated that the explanatory power of six models increased after extending the models with moderators. Ignoring the differences between participants may influence the validity of the findings and contribute to invalid conclusions. For example, when the path between two variables is negatively significant for undergraduate students and positively significant for postgraduates, the analysis of the full set of data may

not show any significance at all. Therefore, this study extended the TAM model with eight external factors and two demographic moderators. More specifically, this paper examines the moderating effect of education and experience on students' use of LMS in Saudi public universities. This paper is organized as follows. Section 2 introduces the proposed model for this study. This is followed by a section on the research methodology. In section 4, the proposed model is examined using Smart software. The discussion and implications sections are then presented. Finally, section 5 highlights the conclusion, limitations and future work. The research model is depicted in and was mainly developed based on the TAM model, two moderators and eight usability variables. The eight variables were adopted from the work done by Zaharias and Poylymenakou, as they were carefully selected based on a profound review of many studies in the domain of usability, e-learning and educational technologies. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

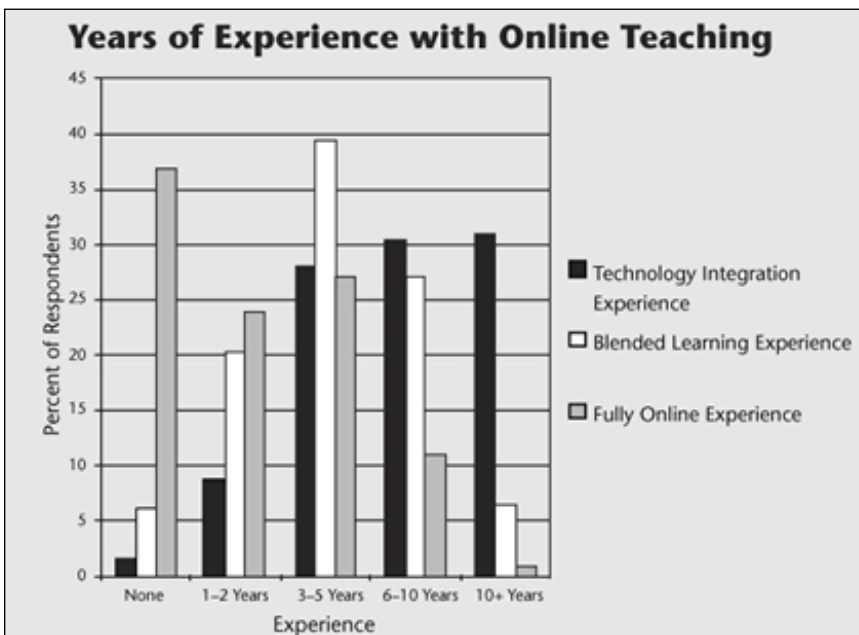


Fig. 1

Path Analysis and Hypothesis Testing

E-Learning is just-in-time education integrated with high velocity value chains. It is the delivery of individualized, comprehensive, dynamic learning content in real time, aiding the development of communities of knowledge, linking learners and practitioners

with experts” The study of the use of e-learning in these different contexts should help us to better understand the dynamics of e-learning, and would also improve the generalizability of the results. Our objective is to better understand the interrelationship among learning presage variables (preconceptions, prior e-learning experience, ability and interest) of students on their perceptions regarding the process of e-learning and furthermore on the effectiveness of e-learning.

Table 1

Fit Statistics	Recommended Values (Hair et al., 1998)	Value for this Model	Does the value of this model meet the recommended value?
χ^2 (df)	Not significant	P = 0.000 (Significant)	No
$\chi^2 / (df)$	Between 1 and 2	1.764	Yes
Goodness-of-fit index (GFI)	Close to 1	0.746	Moderately close to the recommended value
Adjusted goodness-of-fit index (AGFI)	>0.80	0.682	No
RMR (Root mean square residual)	<0.08	0.056	Yes
Tucker-Lewis index (or TLI or NNFI)	>0.90	0.863	Close to the recommended value

The purpose of this study was to determine the effects of four instructional methods on the achievement test scores of 100 students. The following research question was designed to address the problem according to their pretest and posttest results: Do e-learning tools help students in effective learning as compared to traditional/conventional learning methods? To test the Null Hypothesis (H₀) that there is no difference between achievement test scores of the four groups: X₁ (treatment with Internet based e-learning), X₂ (treatment with non-internet based e-learning), X₃ (treatment with Chart), X₄ (treatment with Chalk Talk) at the alpha .05 level.

The Internet provided a means of delivery of education and educational resources to a broader audience. Colleges, universities, and community colleges are now offering online courses and entire online programs of study. According to Travers, community colleges have been at the forefront of the development and delivery of online learning to students (Travers, 2016). Community colleges provide a way for students that cannot afford to attend a larger college or university to get a quality education or to get a lower cost start on their way to a four-year institution. A community college provides transferable programs in Arts and Science, Business, Technology, and Health Sciences while also providing programs in trades such as industrial technology, welding, and electrical engineering. In rural areas and small communities that many community colleges serve, the credential-based programs and workforce programs are essential to many displaced workers.

With the opportunities that online learning technologies provide colleges and universities, how students accept these technologies can affect their success with online classes. The acceptance of students with the online learning environment,

including online collaborative tools, can lead to overall educational success and improve student retention (Thompson, Miller, & Franz, 2013). Kuo *et al.* (2014) found that post-secondary students that accept online learning technology are more likely to be successful in their educational journey.

DISCUSSION AND FINDINGS

Many studies have shown that effective use of elearning could help increase student motivation engagement, and attendance. It should also increase student class participation, and improved behavior and performance on core subjects. One of the crucial factors for students' success in elearning process is self-motivation. The Integration of information and communication technologies with the learning process depends on the participants' personal motivation. In order to enable students to maximize the ICT potential in their learning process, students need to be supported with their digital enhanced learning. However, many studies have shown that non IT students need to increase the level of their technological and communication skills to be able to benefit significantly from the opportunities offered by e-learning. The lack of confidence and experience in using technology might be extra obstacle for other students. In e-learning process, students work independently and some students might find it difficult to understand their contents, due to the lack face-to-face contact with instructors and other fellow students. All these factors indicate that these students will not be able to participate effectively and succeed in the elearning process. Consequently, in order to appropriately progress and successfully use all e-learning tools to effectively access online information, some students need the necessary hardware and some specific skills. Certainly, ELearning would increase the motivation and engagement of students for learning and help them to become self directed independent learners.

CONCLUSION

Online teaching and learning is relatively new. It is exploding in recent years as an option in colleges and universities both within the US and abroad. Most universities and colleges agree that online education is critical to their long-term strategy. Online courses are best taught when they are engineered to take advantage of the learning opportunities afforded by the online technologies. As the demand for online education by those who have jobs and require lifelong education increases, there are more and more expectations on the implementation of on teaching and learning system. For more information about online teaching and learning, one should consult [8-11] and the journal devoted exclusively to distance learning: Distance Education.

MANAGERIAL IMPLICATIONS

There are several models to assess student performance. Crisostomo (2011) uses a static instrument with 60 multiple choice questions with a pre- and post-test to measure student learning. However, for my study, I used one computer assignment to compare

online student performance with in-class student performance. The computer and other media affect the learning process of today's students (Jones and Wright, 2010). Basic computer skills are necessary to earn a degree in today's college education, but we do not teach remedial classes anymore because of budget cuts. However, there are huge individual differences in computer mastery levels. Jones and Wright (2010) used the Group Embedded Figures Test in their study. This test is for field-dependence developed by Witkin *et al.* (1971). Field-independent individuals show greater analytical skills than field-dependent individuals and accounting and engineering attract more field-independent individuals (Hicks *et al.* 2007). However, managerial accounting classes are required for all business majors and these issues are not clear because this course is taken before they choose their specific majors. DeBerg and Chapman (2012) used common final exams with several sections of different pedagogical methods and found that performance on the final exam shows that students who learned with the textbook and students who learned in a nontraditional format have no statistical difference. This is the approach I used for my study since this method applied to principles of financial accounting which is equivalent to our managerial accounting. In addition, they emphasized that too much focus on student evaluation of teaching instruments by administrators to determine teaching effectiveness should be avoided. Wernet *et al.* (2000) shows that increases in enrollment are due to part-time and adult students. These non-traditional students need online classes to pursue their goals. Online classes provide flexibility and convenience for adult learners (Machuca, 2007). Singh and Pan (2004) propose online classes are as good as in-class learning. However, recent huge student loan defaults from for-profit online institutions show total online class degrees are becoming a questionable value. It also depends on the course content and course delivery method. Managerial accounting needs basic analytical skills to understand the course content. Therefore, teaching online managerial accounting needs to include some basic computer skills as we specified in our course objectives.

Information technology increasingly affects higher education, and the use of e-learning technology is expected to improve student flexibility and enhance learning output. However, technology's availability does not ensure its acceptance and continued use automatically among students and educators. Identifying ways to understand and ensure educators' utilization of information technology is a challenge for university management. Key questions include how to understand which factors may affect educators' information systems (IS) continuance intentions and how university management may influence educators' use of e-learning technology.

This paper studies how implementation of e-learning technology may include key management and governing issues, thereby contributing to a greater understanding of IS continuance from a managerial perspective, i.e. how managers at universities proactively may influence and stimulate educators' attitudes and actions toward

meeting their organizations' goals. Implementation of e-learning technology in higher education should not be related solely to individual needs, but rather may be viewed as a prerequisite for obtaining desired university performance following higher-level organizational .A prominent attribute of the IS continuance model is that it offers a robust and parsimonious framework for continuance intention, as only three variables (i.e. satisfaction, confirmation, and perceived usefulness) are needed to establish the core theoretical explanation.

LIMITATIONS AND FUTURE RESEARCH

Many universities and colleges have started to invest heavily in online teaching. Why are institutions across the world doing this? Is the investment justified? Why is there an increasing demand for online courses by employees, employers, individuals with families, and the standard student population? There are many rationales for offering and investing in online education, ranging from increasing access, to improving the quality of learning, to reducing costs, to preparing students better for a knowledge-based society, to responding to market demand, to “lifelong” learning opportunity, to collaborative learning across the world, to profit making . To what extent, though, does the reality match the rhetoric? This article attempts to answer these questions by weighing out the potential benefits and limitations of online learning in the context of the student, the instructor, and the tenured faculty. On the contrary, new advances in Internet-based technology have brought challenges and opportunities to education and training, in particular through online instruction. Online instruction is a form of distance education delivered over the Internet. Studies have shown that online instruction offers a major breakthrough in teaching and learning since it facilitates the exchange of information and expertise while providing opportunities for all types of learners in distant or disadvantaged locations (Hill, 1997; Webster & Hackey, 1997). Online learning is of two types. Some students who cannot afford to access a university or college campus may take programmes by way of distance education offerings. Others may engage in distributed learning or hybrid classes in that they combine some elements of oncampus teaching with online access to materials and discussion forum.

REFERENCES

- [1] A. Sun and X. Chen, “Online education and its effective practice: a research review,” *Journal of Information Technology Education: Research*, vol. 15 2016, pp. 157–190.
- [2] M.N.O. Sadiku, S.M. Musa, and S.R. Nelatury, ”Massive open online courses,” *International Journal of Engineering Research and Allied Sciences*, vol. 2, no. 5, May 2017, pp. 1–3.
- [3] D.U. Bollger and O. Wasilik, “Factors influencing faculty satisfaction with online teaching and learning in higher education,” *Distance Education*, vol. 30, no.1, 2009, pp. 103–116.

- [4] V.N. Gudivada, R. Agrawal, and C. Chu, "Online teaching and learning strategies for programming-intensive courses," *Proceeding of the 10th International Conference on Information Technology: New Generations*, 2013, pp. 781–782.
- [5] J. Stern, "Introduction to Online Teaching and Learning," <http://www.wlac.edu/online/documents/otl.pdf>
- [6] H. Zsohar and J. A. Smith, "Transition from the classroom to the web.
- [7] S. Suryanarayanan and E. Kyriakides, "An online portal for collaborative learning and teaching for power engineering education," *IEEE Transactions on Power Systems*, vol. 19, no.1, February 2004, pp. 73–80
- [8] N. Butcher and M. Wilson-Strydom, A Guide to Quality in Online Learning. *Academic Partnerships*, 2013.
- [9] B.E. Crane, *Online Teaching and Learning: a Practical Guide for Librarians*. Lanham, MD: Rowman & Littlefield, 2017.
- [10] G. Salmon, *E-moderating: The Key to Online Teaching and Learning*. New York: Roulledge, 3rd edition, 2011.
- [11] J. Stephenson (ed.), *Teaching & Learning Online: Pedagogies for New Technologies*. Kogan Page, 2001.
- [12] Drucker, P. (2005), "Need to Know: Integrating e-Learning with High Velocity Value Chains", A Delphi Group White Paper, <http://www.delphigroup.com/pubs/whitepapers/20001213-e-learningwp.pdf>
- [13] *European Journal of Open, Distance and e-Learning EUODL*, Date of publication: 28.05.2009. <http://www.eurodl.org/article=359> The Influence of Experience, Ability and Interest on e-learning Effectiveness
- [14] Vrasidas, C., & McIsaac, M. (2000). Principles of pedagogy and evaluation of Web- based learning, *Educational Media International*, 37(2), 105–111.
- [15] Collis, B (1998). New didactics for university instruction: why and how? *Computers & Education*, 31 pp. 373-393, Collis, B and Moonen, J (2001).
- [16] Collis, B.. (1998) New didactics for university instruction: why and how? *Computers and Education*, 31, 373–393. Collis, B. & Anderson, R.E. (1994).
- [17] Barker, Ph. (2000), Designing Teaching Webs: Advantages, Problems and Pitfalls. Educational Multimedia,
- [18] e-learning - A Review of Literature Barron, Tom (2000a). "The future of digital learning." e-learning May/June 2000. Vol. 1, No.2, pp. 46–7. Barron, Tom (2000b)
- [19] 5 Jun 2010, Abernathy, D.J. (1998). The WWW of distance learning: Who does what and where? *Training and Development* 52 (9) p. 29–30.
- [20] *Research in Education*, Ninth Edition by John W. Best, James V. Kahn, second impression 2006.
- [21] Testing Group Deference's using T-tests, ANOVA, and Nonparametric Measures, Department of Psychology University.

A Study on Small Cap Sectoral Analysis: With Special Reference to S&P All Caps Sectors

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Abstract: This paper studies small-cap investment moments for investors in the long term by considering different indices total returns & price returns, standard deviation & correlation. Plus comparing 10 S&P BSE sectors with other indexes, i.e., S&P BSE Large Cap, Mid Cap, Small-cap and Sensex in terms of correlation and even evaluating different investment period's groove of economic activity in addition to which duration is better for an investor. Given S&P Bse sectoral performance as regards to Small-cap seems to be superior investment despite economy slow down. This analysis indicates in the case of the Indian stock exchange; Small-cap has the potential to be contemplated in an investor's portfolio for the long run.

Keywords: Standard & Poor's (S&P), The Bombay Stock Exchange (BSE), Sensitive Index (SENSEX), Caps (Market Capitalization)

INTRODUCTION

The standard ease of a market prototype in finance is that stock market returns reflect anticipated cash flows in the economy. One of the early challenges to the efficient market prototype is the small-cap peculiar. The essence of this distinctive is for long term holding periods, and small-cap stocks outperform large-cap stocks.

The issue of small stock outperformance remains a topic of debate not only in India but across countries. But when it comes to the Indian stock market, the focus remains on returns fluctuation with less optimistic investors who argue that the high riskiness along with corporate governance and liquidity squeezes prevails under small-cap stock's performance. The irony is that broader investment opportunities still exist in the small-cap space, even as the whole game of investing has got more rigid in the last couple of years. And thus, investing in small caps has become even more challenging.

This study aims to showcase small caps attribution in making a positive long-run portfolio for investors by taking S&P BSE Sensex, large, mid, small caps in the perspective of total returns and price returns & calculating the risk associated with different caps. Furthermore, even evaluating 10 S&P BSE sectors and their correlation with other indices and layout a way to assess different sectors in terms of the cyclic

and defensive sector which will dispense a strategy for an investor in outlook to their long term investment.

This paper provides new shreds of evidence while considering the different periods of investment relative to sectors and indices and displaying which duration is better for investors to attain a long-run gainer in the portfolio from a risky and peculiar small cap section.

LITERATURE REVIEW

SMALL CAP STOCKS MAY CONTINUE TO BEAT LARGE CAP IN 2021

India's smaller stocks are beating their larger peers first time in 3 years. Mainly strong corporate earnings, government short, and central bank efforts to bolster the wealth and a stream in retail trading have to aid smaller shares to begin outperforming since summer. *Nupur Acharaya, ET Now* founds the Nifty's price-to-earnings multiple has reached an all-time high, the small- and mid-cap gauges are trading at similar valuations to late 2017, the last year they outperformed the more extensive index.

SMALL CAP STOCKS NEW ECONOMIC CYCLE WHERE TO LOOK FOR PICKING SMALL CAP MID CAP

A time where the economy is likely to emerge of this phase, and we see development coming back next year, is the time when a lot of the small caps and midcap companies tend to do well. There is a strong correlation between the mid and small-cap stocks' performance and the domestic economy. In those sectors, as vaccinations start, we would expect these cyclical to play out. They will probably outperform going forward. There is still room for it to converge on a long-term average. (*Mahesh Patil, CO-CIO, ABSL AMC, ET NOW*).

SMALL CAP STARS

In the broader market, especially in the smallcap and micro-cap space, companies exhibit signs of motion. There are as many as eight companies within the market-cap of Rs 1,0005,000 crore that have risen more than 100 percent in the last six months, data from AceEquity showed. *Jimeet Mod* seems that first-time investors and traders, who can also be termed as lockdown players, have taken this market higher, especially by enlarging smallcap and penny stocks' share prices. Largecap stocks, which were in focus in 2019, saw profit booking at a high rise in 2020, while the smart money seems to be moving towards the unloved 'smallcap' stocks. The broader market has been in a bear phase since 2018, but with recent price correction, money started moving towards this undervalued space. (*Kistij Anand, MONEY CONTROL*).

MORTALITY RISK IN SMALL CAP INVESTING

There is no definite thing when it comes to investing. Investing is a game of probability, and in any game of likelihood, there is always a viable of unpleasant payoffs. The probability of such unfortunate gain is much more in the case of small caps. *Pankaj*

Murarka ET NOW remarks Statisticians use the Bell Curve to explain the probability distribution of an event. The same Bell Curve can be effectively used to demonstrate the risk-reward equation of an investment hypothesis. The curve is entirely lopsided when it comes to small-cap investing, which productively means that if you get a small-cap company investment hypothesis right, then the reward is vast (mindboggling). Still, the probability of getting that hypothesis directly is very low.

RESEARCH AIMS & OBJECTIVES

AIMS

- Uncovering long term investment opportunities for investors incubate by small-cap sectoral analysis.
- Evaluating which duration is better for an investor to invest in a small-cap.
- Analyzing deviation towards the small-cap sector.
- Changing perception towards small-cap by scanning divergent period of investment.

OBJECTIVES

- Considering total returns & total prices to estimate the performances of different caps in the Indian stock market.
- Inspecting volatility & riskiness by examining standard deviation of different Caps.
- Index Sectoral division and finding correlation to measure strength between indices and 10 S&P Bse sector. So as to measure whether small cap investment is moreover cyclical in nature

METHODOLOGY

DATA

The historical index returns are collected from the Asian index web page and are treated as secondary data. Various S&P Bse index levels, as well as 10 S&P Bse sectors, have been examined. Indices constitute Large Cap, Mid-cap, Small-cap & Sensex, and 10 sectors: Auto, Bank, Capital goods, FMCG, Healthcare, IT, Metal, Oil gas, and Reality, Telecom.

VALUATION

- Performance valuation of various index level in terms of Total return and price returns is done.
- The standard deviation of divergent indices tendered.
- Correlations between different index levels and discrete sectors are analyzed to proclaim the strength between them.

RESULTS

INDIA'S DEVELOPMENT FORECASTS

Table 1: Global Growth Projection

	MORGAN STANLEY	CLSA	GOLDMAN SACHS	CREDIT SUISSE
GLOBAL	3.2	1	3.4	2.5
DM	1.3	N/A	1.7	1.4
EM	4.3	N/A	4.8	4.3
US	1.8	1	2.3	1.8
EURO AREA	0.9	0.3	1.1	1
JAPAN	0	N/A	0.4	0.4
UK	1.4	N/A	1.1	1.3
CHINA	6	6	5.8	5.9
INDIA	6.3	5	6.4	6
BRAZIL	2.2	N/A	2.2	2.7
RUSSIA	1.7	N/A	2.2	N/A

Source: DSIJ, DEC 23, 2019-JAN 05, 2020. PG N0- 29

As the global market unceasing develops, uncertain or unsure news flash sidelines in 2019 2020, yet equity market surprised investors with its performance in 2019 and even 2020 after challenging atmosphere amid pandemic and posting a V shape recovery in the Indian market.

Reviewing the Indian market estimation by global merchants such as Morgan Stanley and Credit Suisse has changed India decree by terming underweight to overweight and pondering a bit higher than China. Although CLSA has a neutral stance on India while still spirited on the emerging market group.

Table 2: Sensex V/S Global Indices Performances

INDEX	RETURNS%			P/E RATIO
	YTD	3 YR	5 YR	
NASDAQ composite	38.26	81.37	151.99	74.03
KOSPI	26.05	12.42	40.32	31.67
NIKKEI 225	12.66	16.84	40.37	37.27
SENSEX	11.75	38.64	80.64	33.67
NIFTY 50	11.06	31.64	74.1	33.67
SHANGHAI STOCK EXCHANGE COMPOSITE INDEX	9.74	1.74	-6.48	17.54
HANG SENG COMPOSITE INDEX	8.32	-7.41	8.49	12.7
DOW JONES INDUSTRIAL AVERAGE	5.12	23.31	73.76	25.06
S&P 500	3.52	38.3	82.28	30.85
IBOVESPA	-0.45	58.29	154.36	114.33
S&P/ ASX 200	-0.62	10.8	30.1	44.14
DAX	-0.7	-0.57	26.48	66.12
CAC 40 INDEX	-8.26	1.86	20.88	57.28
FTSE 100	-13.22	-11.42	10.03	200.27

Source: DSIJ, DEC 21 2020- JAN 03, 2021. PG-20.

The Following table shows up the Indian essential benchmark indices performance versus global indices. Focusing on the execution of the Indian market, it has set Indian investors at a net gain in 2020 as the market set up gears after a sharp-cornered recovery. In 2019, when the Indian market was underperforming compared to the significant global market as Sensex & nifty, they were nearly at 11.99 percent and 9.61 percent. Off-balance to overpower the turnup market peers compared to other Asian and European markets, which were slugging high about 20 to 30 %. But that was not the case in the 2020 market. With one of the most unmanaged and unfamed wavers in the market, the Indian market still stood up as Sensex & nifty, where nearly at 11.75 percent & 11.06 percent outmarch omitting Nikkei, Kospi, Nasdaq.

PERFORMANCE VALUATION

Table 3

Index Level	Total Returns	Returns %				
	Total	1 Mth	3 Mth	1 Yr	3 Yr	5 Yr
S&P BSE SMALL CAP	21707.2	7.27	21.86	33.53	-1.05	9.85
S&P BSE SENSEX	70543.23	8.18	25.7	17.16	13.26	14.26
S&P BSE MID CAP	21712.66	6.09	22.28	21.31	1.29	11.23
S&P BSE LARGE CAP	6597.79	8.14	24.1	16.31	10.6	13.27

Index Level	Total Price Ret	Returns%				
	Price Ret	1 Mth Pr	3 Mth Pr	1 Yr Pr	3yr Pr	5yr Pr
S&P BSE SMALL CAP	18098.11	7.25	21.73	32.1	-2	8.86
S&P BSE SENSEX	47751.33	8.16	25.44	15.75	11.92	12.83
S&P BSE MID CAP	17941.43	6.07	22.01	19.87	0.22	9.99
S&P BSE LARGE CAP	5357.31	8.12	23.78	14.66	9.12	11.74

Source: Asian Index Pvt Ltd, Website.

While comparing the total returns and the price returns, small caps stand out compared to large and mid-cap in terms of total returns and price returns. Whereas if we look at the total return and price return of 1 year, small-cap performance has tremendously gone up double the large-cap and mid-cap. Some downward moments were observed phase 3 yrs ago due to multiple issues related to compliance and new rules and regulation faced by mid and smallcap stocks

Table 4

YEARS	SMALL CAP	SENSEX	MID CAP
	TOTAL RETURN %	TOTAL RETURN %	TOTAL RETURN%
2005	73.18	42.33	46.63
2006	15.97	46.7	31.13
2007	93.67	47.15	68.63

Table 4 (Contd.)...

...Table 4 (Contd.)

2008	-73.12	-52.48	-67.44
2009	119.34	76.35	102.4
2010	15.71	17.43	16.15
2011	-41.63	-23.64	-33.25
2012	35.05	27.99	40.65
2013	-9.66	10.7	-4.03
2014	71.13	31.87	56.91
2015	7.73	-3.68	8.72
2016	2.7	3.47	9.28
2017	60.8	29.56	49.9
2018	-22.93	7.23	-12.53
2019	-5.86	15.66	-2.06
2020	33.53	17.16	21.31

Source: Asian Index Pvt Ltd, Website;DSIJ.

The above table level indicates the positive approaches the small cap has shown in the market. Bse Small Cap index in the last 16 years outperformed Sensex nearly by eight times. India's new alpha generation with the latest ideas, venture capital ability, and government new measures towards them have generated a well-being course that has line up towards brighter small-cap accomplishment. As seen above, small-cap has a cyclic approach towards economy since Small-cap is proportionally related to the country's wealth. And can either take time to perform. So enter at right time at right small size or base stock can be a big trigger.

Table 5

Month Wise 52 Weeks Highs									
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT
LARGE CAPS	11	8	1	2	1	0	2	8	13
MID CAPS	16	20	1	0	1	1	3	11	15
SMALL CAPS	98	71	5	1	1	6	17	82	82

Source: DSIJ, SEP 28- OCT 11,2020 .PG-25.

Even seeing at the 2020s most crucial period as a part of the analysis, one can see from the above figure before lockdown, i.e., Jan & Feb the highest number of stock touching 52 weeks high was small-cap stock nearly around 169, while 19 stocks from large-cap and 36 stocks from mid-cap. But during the lockdown period market came down and so the performance of stocks and indices. However, besides a few months post lockdown, the numbers again started to increase gradually. As aftermarket showed a sense of V-shaped recovery, the positive moments of stocks were four times high in small-cap compared to large and mid-cap.

Mark out that the number of small-cap trending high is remarkably higher than that of large & mid-cap. The high number of stock available in the basket creates an opportunity for an investor to make a stock-specific approach i. e, monopolistic market share companies- IEX, MCX, Pidilite, etc.

Table 6

CALENDER YEAR	SENSEX	BSE MID CAP	BSE SMALL CAP	EXCESS RETURN(%) DELIVERED BY SMALL CAP
	RETURNS(%)			
2004	11.62	23.37	38.27	26.65
2005	42.33	46.63	73.18	30.84
2006	46.7	33.13	15.97	-30.73
2007	47.25	71.14	98.82	51.57
2008	-51.22	-66.59	-72.19	-20.98
2009	76.35	102.4	119.34	42.99
2010	17.43	16.15	15.71	-1.72
2011	-26.64	-34.19	-42.61	-17.96
2012	26.7	40.17	34.28	7.59
2013	7.67	-6.4	-10.78	-18.75
2014	30.12	54.96	68.82	38.7
2015	-4.9	7.71	6.37	11.27
2016	1.78	6.99	0.88	-0.9
2017	26.99	48.24	60.05	33.06
2018	7.2	-13.51	-23.41	-30.63
2019	9.74	-3	-1.97	-11.71
	16.96	20.33	23.22	6.26

Source: DSIJ, JUNE 24- JULY 7, 2019 .PG-22.

The BSE small-cap index, on average, has remitted 6% more return than the Sensex. However, since January 2018, the underperformance of small-cap is visible, & moreover, mid-cap also have under-bear in the last 18 months.

Once the issues associated with liquidity gets resolved and gross up-swings crop up, then a long term investor in small-cap can take solace from the actuality that returns generated by the small-cap can be slightly higher on average when compared to that of large caps

Table 7

SMALL CAPS STATS AS ON 10 th JUNE 2019 (1 YEAR RETURN)	
No. of Small caps stocks	591
Positive Returns	130
Negative Returns	461
>100 %	13
50-100 %	19
25-50 %	25
0-25 %	73
<0 %	561

Source: DSIJ, JUNE 24- JULY 7, 2019 .PG-23.

Companies that fall between ₹ 200 cr to 1350 cr market cap comes under small-cap stocks. As the data is up to June 10, 2019, 519 stocks are considered into small-cap & now the stocks have lifted to 669. Among which 130 stocks generated positive returns & 461 stocks generated a negative return.

Almost 21 % of stocks in the small cap basket generated a positive return in the past year. At least 13 stocks generated returns greater than 100% in the year gone by, and almost 57 stocks have generated returns over 25%.

Most odds—on and blindsiding segment which outsails was small caps. With 62 stocks twirl out to be multi-bagger, as many as 151 small-cap come up with more than 50%. After noticing the small-cap half a year positive-negative returns and then comparing it with the added table, which shows positive returns in cumulative years. Perceiving out of 253 positive stocks, half of the stocks showcasing conclusive return were from small-cap.

RISK ANALYSIS

Table 8

RISK	Std Deviation			Total Returns %		
	3 YR	5 YR	10 YR	3 yr	5 yr	10 yr
S&P BSE SMALL CAP	29.8	26.24	24.66	60.8	7.73	15.71
S&P BSE SENSEX	22.29	19.17	17.69	29.56	-3.68	17.43
S&P BSE MID CAP	25.96	22.84	21.49	49.9	8.72	16.15
S&P BSE LARGE CAP	22.06	19.13	17.87	16.31	10.6	13.27

Source: Asian Index Pvt Ltd, Website

As return and risk are proportionately related, higher the risk, higher the return. That's the same in the case of the above table as the higher the standard deviation higher the return. Considering, i.e., small-cap as standard deviation of this particular cap is higher than any other caps and Sensex. Still, when we look at its return part 3 yrs, returns are double than any other indices but less in 5 yrs and same as others indices at 10 yrs. As the changes indicate, the positive-negative scenario happens to small and mid sector relate to liquidity issue, rural stagnation, and ongoing global trade war the reason for less performance of this cap.

Table 9

RESHUFFLING REQUIRED IN MULTICAP FUND					
MCAP	MKT VALUE (₹ CR)	% OF TOTAL MULTICAP CORPUS (JULY 2020)	ASSUMED NEW ALLOCATION (%) (CONSERVATIVE)	LIKELY MKT VALUE ALLOCATION	POTENTIAL BUYING & SELLING
LARGE CAP	10628.5	74.61	45	64106.2	42180.34
MID CAP	22527	15.81	25	35614.6	13087.57
SMALL CAP	7623.91	5.35	25	35614.6	27990.64
NET CA & OTHERS	6020.77	4.23	5	7122.91	
	142458	100			

Source: DSIJ, SEP 28- OCT 11, 2020 .PG-26.

As in the present scenario, the SEBI decision is that multi-cap funds will have to invest 25% each in large, mid & small cap, as shown in the above figures. Previously only 65% was mandated to be invested in equities with no restriction on capitalization.

In addition to the multi-cap fund has to ingrain the portfolio by Feb 2021. In insertion of 27990 cr invested in small-caps can be immensely upbeat for small-cap quality in the mutual fund portfolio. Due to this decision, there a chance of creating more liquidity in the market & this will impact not only mutual funds but also the stocks under the Proceeding towards Mid-cap, no ample changes have taken place in the returns part. And the reason for undervaluation & getting eliminated from the market is that functioning regulatory compliance is getting stricter day by day. Large companies are becoming larger and small ones are getting stamp out from the market. Mid-cap seems to be profit-making by index value, but a different picture comes under when EPS gets calculated as loss-making or low profit companies.

Therefore index EPS will not always gives the right vision. Earnings growth of mid-cap is typically faster than large-cap due to their low base. Hence in a standard market, they deserve valuation higher than large-cap indices.

SECTORS DIVISIONAL ANALYSIS TABLE 3

Table 10

SECTORAL INDICES PERFORMANCE (%)			
INDICES	1 MONTH	YTD	3 YEARS
BSE CAPITAL GOODS	18.2	0.46	-8.05
BSE AUTO	12.31	8.89	-20.75
BSE BANKEX	19.39	-7.6	15.41
BSE IT	1.75	39.8	98.28
BSE HEALTHCARE	3.32	51.3	44.37
BSE FMCG	4.72	2.8	13.42
BSE METAL	22.88	-2.01	-27.71
BSE REALTY	14.17	-9.6	-14.63

Source: DSIJ, DEC 07-20,2020 .PG-23.

The shares of the more firmly linked companies to the economy are labeled as cyclical shares, while the shares that are not touched by economic trends are called defensives. The above table explains the business cycle of the economy and how investing in swings of shares can lead to wealth by just interoperating stocks' structure in terms of cyclical stock and defensive stock.

Some examiner has divided cyclic stocks into rate-sensitive and commodity-based sectors. In the rate-sensitive sector, the business is fundamentally affected by interest rates induced in the economy. Automotive, banks & capital goods and companies are examples of ratesensitive sectors that are cyclic. Metals, mining, cement, etc companies are examples of a commodity-based sector that are cyclic in type.

However, the defensive stocks in 2021 should not be overlooked as IT and Healthcare continue to override the list of sectors with the highest earnings growth. At the pandemic time, the market observed money flow from cyclical stocks into consumer defensive stocks and export-based sectors such as IT & Healthcare, as even indicated in the table above.

Table 11

AVERAGE RETURN	CYCLICAL STOCKS	DEFENSIVE STOCKS
Average ytd	-21.29	-3.37
Average 3 - yr	43.02	7.43
Average 5 - yr	177.66	47.27

Source: DSIJ, DEC 24 2018-JAN 6,2019 .PG-54.

Cyclical stocks may be low-risk and high-gain or high-risk and low-gain provided on how expert one is at forecast business cycles.

Stocks are anticipated to outperform owing to the broad-based recovery in the economy. It is being detected that cyclical companies bear huge losses during recessions. When the economy exhibits advancement, it is normal to spot these cyclic stocks that mention immense swings from profit to loss. One of the prime elements influencing cyclical stocks' performance is various regulative and administrative bodies' laws and ordinances.

Cyclic stock can be arranged in terms impacted by boom & bust in the economy. Even by demand/supply dynamics of product governed by factors like P/E earning cash flow.

Usually, P/E down indicates higher earnings. Cyclical stock P/E down marks the end of the favourable period, and its reversal stock down & P/E up. The cyclic stock has a high interrelation to economic activity more with trade cycle and reflects financial state. Noncyclic or defensive stock remains stable regardless of the trade cycle and economic condition.

Thus, In the short run, the defensive stock outperformed. In the long run, cyclical stock outperforms mentioned in the above table, considering YTD, i.e., short-term defensive stocks, perform better than cyclical stock. Whereas if we study 3 to 5 yrs returns, cyclical stocks perform way better than defensive stock. Dealing with cyclic shares gives high returns and so as high risk. With cyclic stock, one needs to choose an industry with a complete significant capital expenditure that may showcase a positive outcome.

The reason why the above concepts of stock specification into cyclic and defensive were introduced to analyze the relationship with major caps like Large, Mid, Small Caps and even with Sensex to analyze their correlation as the above characteristic of cyclic stock has been similar as Small cap.

CORRELATION BETWEEN INDEX AND SECTOR

3 YR CORRELATION										
INDEX/ SECTOR	S&P AUTO	S&P BANKEX	S&P CAPITAL GOODS	S&P FMCG	S&P HEALTH- CARE	S&P IT	S&P METAL	S&P OIL& GAS	S&P REALITY	S&P TELECOM
S&P BSE SMALL CAP	0.773	0.743	0.821	0.679	0.717	0.455	0.727	0.687	0.783	0.512
S&P BSE SENSEX	0.815	0.91	0.781	0.745	0.602	0.616	0.718	0.735	0.697	0.543
S&P BSE MID CAP	0.836	0.806	0.847	0.727	0.735	0.456	0.771	0.723	0.785	0.556
S&P BSE LARGE CAP	0.839	0.903	0.807	0.765	0.648	0.605	0.756	0.766	0.724	0.563

Source: Asian Index Pvt Ltd, Website

90-1 (VERY HIGH +VE)
.70-.90 (HIGH + VE)
50-70 (MODERATE +VE)
.30-50 (LOW +VE)
.00-.30 (NEGLIGIBLE COO)

Table 12

INDEX LEVEL	CYCLIC SECTOR	DEFENSIVE SECTOR
S&P BSE SMALL CAP	Correlation with all cyclic sectors is Highly positive.	Correlation with Healthcare and Reality is Highly positive; & Moderately positive with FMCG, Oil, gas & Telecom; & with IT Lowly positive.
S&P BSE LARGE CAP	Correlation with the cyclic sector is Highly positive, and it is Very highly positive with the banking sector.	Correlation with Healthcare, IT & Telecom stands Moderately positive; But with FMCG & Oil gas, it is Highly positive.
S&P BSE MID CAP	Correlation with all cyclic sector is Highly positive.	Correlation with IT stands Lowly positive & with Telecom stands Moderately positive; whereas with FMCG, Healthcare, Oil & gas stands Highly positive.
S&P BSE SENSEX	Correlation with the cyclic sector is Highly positive except with the banking sector, which is Very Highly positive, whereas, in reality, it is Moderately positive.	Correlation with Healthcare, IT & Telecom is moderately positive; whereas with FMCG & Oil gas, it is highly positive.

The above figure exhibits the correlation between different significant indices and the 10 S&P sector, precisely examining stock's divisional facts. As perceived, the association with different caps angles varies. At the same time, it sounds great to know that there are close to 6000 shares listed in the stock market wherein 669 shares comes under small-cap till today date. Still, the correlation with cyclical stocks stands highly positive, which showcases a probability that the feature thus small-cap holds can guide investors to plan their small-cap entry posing cyclical nature. And to go with defensive stocks except IT, where correlation stands lowly positive. With oil gas, FMCG, telecom moderately positive and highly positive with healthcare.

CONCLUSION

The purpose of this study is to investigate whether a small-cap has the potential to sustain for the long run in an investor's portfolio. While analyzing the total returns and price returns, the small-cap performance was higher than other caps. The relation with an economy that adversely affects small-caps has let investors think which period they should select to incubate in small-cap.

As mentioned in the literature review, the probability of risk and returns examined the relations why such volatility is appraised in small-cap. Yet, the performance has set out all the deviations which these underrated sectors have set. The high riskiness has backed out in terms of high returns as calculated while measuring standard deviation. Even though there's a way to cover in small-cap but the divergent which small caps holds was set aside by index & sectoral division analysis in terms of correlation. The

strength with different sector variables, which small & other Caps contain, can form a strategy to rate a move towards cyclical or defensive stocks.

Interpreting and taking into account the different measures that advise how cyclical stocks are related to demand/supply, economic activities that sound similar to small-cap, and the characteristics that are proportionately related to cyclical stocks. Hatch the investment strategy, one investor can hold on to develop how to induce a small-cap into their portfolio for the long run.

REFERENCES

- [1] Asiaindex.co.in. 2021. Asia Index Pvt. Ltd. [online] Available at: <<https://www.asiaindex.co.in/>> [Accessed 31 January 2021].
- [2] Ramdasi, N., 2020. Big Triggers For Small-Caps. [online] *Dalal Street Investment Journal*. Available at: <<https://www.dsij.in/DSIJArticleDetail/ArtMID/10163/ArticleID/15065/BigTriggers-For-Small-Caps>> [Accessed 24 September 2020].
- [3] Supekar, Y. and Deshpande, G., 2019. Small - Caps Flavour of the Season!. [online] *Dalal Street Investment Journal*. Available at: <<https://www.dsij.in/DsijIssueDetails/ArtMID/10519/ArticleID/7972/small-caps-flavourof-the-season>> [Accessed 20 June 2019].
- [4] Supekar, Y., 2020. Cyclical Stocks To Do Well. [online] *Dalal Street Investment Journal*. Available at: <<https://www.dsij.in/DsijIssueDetails/ArtMID/10519/ArticleID/15974/cyclicalstocks-to-do-well>> [Accessed 3 December 2020].
- [5] Jadhav, S., 2018. Hand-Picked Cyclical Stocks Can Offer Good Returns. [online] *Dalal Street Investment Journal*. Available at: <<https://www.dsij.in/DSIJArticleDetail/ArtMID/10163/ArticleID/5233/Hand-PickedCyclical-Stocks-Can-Offer-Good>Returns>> [Accessed 20 December 2018].
- [6] Supekar, Y. and Bojwani, K., 2020. *Broader Market Indicators : Key To Understanding The Market Mood*. [online] *Dalal Street Investment Journal*. Available at: <<https://www.dsij.in/DsijIssueDetails/ArtMID/10519/ArticleID/15252/broader-marketindicators-key-to-understanding-the-market-mood>> [Accessed 8 October 2020].
- [7] Deshpande, G., Gangule, V. and Supekar, Y., 2021. WHERE TO INVEST 2021. *Dalal Street Investment Journal*, [online] p.20. Available at: <<https://www.dsij.in/DSIJArticleDetail/ArtMID/10163/ArticleID/16171/Where-To-InvestIn-2021>> [Accessed 17 December 2020].
- [8] Acharya, N., 2020. Smallcap stocks may continue to beat largecaps in 2021. Here's why. [online] *The Economic Times*. Available at: <<https://economictimes.indiatimes.com/markets/stocks/news/smallcap-stocks-may-continueto-beat-large-caps-in-2021-heres-why/articleshow/79718614.cms>> [Accessed 14 December 2020].
- [9] Patil, M., 2020. New economic cycle starting, where should you look for mid and smallcap picks?. [online] *The Economic Times*. Available at: <https://economictimes.indiatimes.com/markets/expert-view/new-economic-cycle-startingwhere-should-you-hunt-for-mid-and-smallcap-picks-maheshpatil/articleshow/79756907.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst> [Accessed 16 December 2020].
- [10] Anand, K., 2020. Smallcap Stars: 86 Stocks With Market-cap Below Rs 5,000 Crore Gain 100-1,100% In 2020. [online] *Moneycontrol*. Available at: <<https://www.moneycontrol.com/news/business/markets/smallcap-stars-86-stocks-withmarket-cap-below-rs-5000-crore-gain-100-1100-in-2020-5549951.html>> [Accessed 16 July 2020].
- [11] Murarka, P., 2019. Mortality risk in smallcap investing. [online] *The Economic Times*. Available at: <https://economictimes.indiatimes.com/markets/stocks/news/mortality-risk-in-smallcap-investing/articleshow/68932023.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst> [Accessed 18

Customer Engagement and Emotional Attachment: An Exploratory Investigation

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Abstract: Today's consumer market boasts of an overabundance of products and brands. Creating a mark in the consumer mind has become equivalent to unearthing a solution for the toughest conundrum. Every marketer is vying to capture a share in the consumer mind and walking that extra mile, to create an everlasting impression in the minds of the consumer.

One of the major vehicles through which marketers are successfully creating this space is through social media. Social media has also become an important platform that gives an equal opportunity to a happy and content consumer as well as to a discontent and dissatisfied consumer to voice their opinions. It can both be a boon as well as bane to a marketer.

In this context, it is very important for a marketer to understand the various dimensions of customer engagement and how customers can get emotionally attached to a brand. As this could be an important pedestal for them to reach out to a greater customer base.

On the consumer front, it has been observed that high level of engagement with a brand leads to brand loyalty and also there is generally perception that once consumer becomes emotionally attached to a brand, the brand loyalty increases. Both the constructs are important antecedents to brand loyalty. It stands to reason what is the relationship between the two constructs – Customer engagement and Emotional Attachment. While looking at both these constructs, it is also important to understand them, in the context of products with varying levels of involvement.

Keeping this aspect in mind, the objective of this study is to understand the consumer perspective on both constructs—Customer engagement and Emotional Attachment for products with varying levels of involvement. To explore the above research question, focus group methodology and in-depth interview was used to explore consumer insights on Customer engagement and Emotional Attachment for products with varying levels of involvement.

INTRODUCTION

Today's consumer market boasts of an overabundance of products and brands. Creating a mark in the consumer mind has become equivalent to unearthing a solution for the toughest conundrum. Every marketer is vying to capture a share in the consumer mind

and walking that extra mile to create an everlasting impression in the minds of the consumer. But the challenge is getting tougher by the day.

If we look around the marketplace, we can see a plethora of brands with similar features and objectives. If we delve deeper, it can be very easily deduced that there is minimum to null differentiation between brands on the tangible front. It is in such a scenario, the intangibles associated with a brand plays a pivotal role in creating the impact in the minds of the consumer, as desired by the marketers.

Discussing about intangibles, one of the crucial aspects that draws our attention is, how a brand is perceived in the eyes of the consumer. A positive consumer perception or positive consumer experience with the brand is the starting point to the entire customer journey. It is in this context the emotional attachment of the consumer to the brands plays an import role. Generating an “emotional brand attachment” is one of the major challenges faced by a marketer in the marketplace. This is one of the prime motivators for Organizations looking for means to create a strong “emotional brand connections with the consumers” (Malär *et al.* 2011).

It has also been observed that multiple positive experiences with a brand make a content and pleased customer. In today’s time, with the onset of social media, it has become easier for a consumer to voice their opinion and inform others about the same. So a happy and content customer can go out of his or her way in proclaiming his love for the brand and a dissatisfied and angry customer can go about sharing his hatred and negative experiences with the brand. So the social media can both be a boon or a bane to a consumer. Social media creates a platform for the customers to interact with fellow customers and voice their experiences and opinions about a product or service. This can be done by the consumers by joining different brand communities and sharing their experiences and feedback through pictures, videos and comments on the brand.

Due to this reason with the inception of social media and its mounting obsession, customer engagement as a construct is gaining lot of popularity (Cheung, Lee, Jin, 2011). Doorn et.al (2010) had also stated that Customer Engagement Behavior is a vital topic for marketing scholars who want to take a complete and integrated approach to understand consumer. In this background, it is very important for a marketer to understand the various dimensions of customer engagement and how customers can get emotionally attached to a brand. As this could be an important pedestal for them to reach out to a greater customer base.

On the consumer front, it has been observed that high level of engagement with a brand leads to brand loyalty and also there is generally perception that once consumer becomes emotionally attached to a brand, the brand loyalty increases. Both the constructs are important antecedents to brand loyalty. It stands to reason what is the relationship between the two constructs – Customer engagement and Emotional

Attachment. While looking at both these constructs, it is also important to understand them, in the context of products with varying levels of involvement.

LITERATURE REVIEW

CUSTOMER ENGAGEMENT

Customer Engagement as a concept has been increasing gaining popularity among marketers. As cited by Brodie (2011) from Hollebeek (2011), customer brand engagement was defined as “a customer’s motivational, brandrelated and context-dependent state of mind characterized by specific levels of cognitive, emotional, and behavioral activity in brand interactions”. Hollebeek (2012) further focused on understanding the customer engagement and customer value interface for utilitarian as well as hedonic brands. It was illustrated how customer engagement played an important role in generating Customer value for both utilitarian as well as hedonic brands. As per the study, a curvilinear relationship exists between both constructs for the different types of brands. “Up to a focal brand-, category- consumer-, and situation specific growing CE was found to generate greater CV increases for hedonic, than for utilitarian brands” - stated by Hollebeek (2012). CE refers to Customer Engagement and CV refers to Customer Value.

Doorn et.al. (2010) in the study had proposed five dimensions of Customer Engagement Behaviour – “valence, form or modality, scope, nature of its impact, and customer goals”. Attitudinal antecedents were the key factor affecting customer engagement behavior, which mainly included customer satisfaction, brand commitment, brand attachment, trust and brand performance perceptions. Another important aspect highlighted by the author was about customer goals. Customer goals also affect customer engagement as customer may want to maximize their consumption and relation benefits to increase their engagement level with the brand. Brodie *et al.* (2011) proposed that customer engagement can be understood from the “theory addressing interactive experience and value cocreation within marketing relationships”.

Kumar *et al.* (2010) in their study had mentioned that customers provide value to the organizations through their “own transactions - customer lifetime value”, through their referrals “customer referral value”, through encouraging other customers for purchases – “customer influencer value”, through providing ideas for improvement – “customer knowledge value”. These four dimensions together develop the customer engagement value construct.

EMOTIONAL ATTACHMENT

Attachment theory was initially stated by Bowlby (1979, 1980). The author had specified on the relationship between a parent and an infant. In the marketing paradigm, Fournier (1998) had stressed on 15 types of consumerbrand relationships along the emotion of love, commitment, intimacy and passion.

Thomson (2005) specified that emotional attachment should be differentiated from other constructs like brand attitude, favorability, satisfaction and involvement. However there can be correlation between attachment and the other constructs. Thomson (2005) also developed a measure that reflects the strength of consumers' emotional attachments to brands. In the study a set of emotion items were identified to potentially indicate attachment. The scale mainly looks at three interrelated first order factors "Affection, Passion, and Connection that map onto the second-order emotional attachment construct." Although the results highlighted that Emotional Attachment predicts brand loyalty but the author does not want to confirm that Emotional Attachment is the only driver for loyalty. The author believes the scale to be relevant as the outcomes are similar to the attachment theory and the scale is beneficial because it "explains variance beyond attitude, involvement, and satisfaction".

Malär *et al.* (2011) in their research had stressed on that consumers have a tendency to have a better emotional connection with a brand that corroborates who they are at the moment rather than with a brand that "promises them help achieving an ideal self". One important aspect that (Malär *et al.* 2011) specified on is the role of product involvement in understanding the relationship between self congruence and emotional brand attachment. It has been observed that when the involvement is high, brand is more "personally relevant" and the "consumer will elaborate on the connections between the brand and his or her actual self". Adding to this if the "comparisons are congruent, the consumer's actual self is verified, and the consumer feels a stronger connection with the brand". This may lead to stronger emotional brand attachment, whereas for a product that has a low level of involvement, "consumers are less willing to engage in self-verification through the brand"

OBJECTIVE

On reviewing literature it was observed that although there are quite a few studies internationally that look at understanding both the constructs (emotional attachment and customer engagement) individually. But, there are no studies that look at understanding consumer perception on both the constructs together and unearth the relationship between them. Hence the objective of this research is to focus on understanding the relationship between emotional attachment and customer engagement construct for products with varying degree of involvement. Before embarking on developing the questionnaire, we needed to understand the consumer perception on the concepts of customer engagement and emotional attachment. Keeping this objective in mind, we used the focus group methodology to initially understand consumer viewpoints and understand their perception of the constructs customer engagement and emotional attachment for products with varying levels of involvement. In future we would be working on developing an extensive empirical study to validate the relationships between the constructs.

Based on the literature review we put forward the following propositions and the conceptual framework for our study.

P1: Consumer involvement positively influences customer engagement

P2: Consumer involvement positively influences emotional attachment.

P3: Customer engagement positively influences brand loyalty

P4: Emotional attachment positively influences brand loyalty

P4: There is a significant relationship between emotional attachment and customer engagement

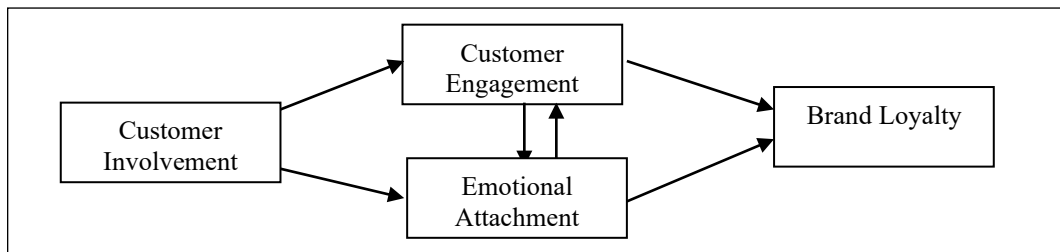


Fig 1 : A Conceptual Model to Understand Relationship between Customer Engagement and Emotional Attachment

RESEARCH QUESTION AND APPROACH

Taking into consideration the literature review and the proposed conceptual model the following research question was proposed to guide the discussions. Consumers were provided two product categories in the electronics segment. One of the products was in the low involvement space and the other one was in the high involvement space. For the low involvement product category, we had taken ceiling fan and for the high involvement product category we had taken laptop. Consumers were offered to think of a brand of their choice in each of the product segment. The group was initially explained the concept of customer engagement and emotional attachment. In this context the following themes were provided for discussion to the groups. Initially the first theme was provided. Once the discussion progressed, the second theme was provided to the group.

- Do you get engaged with a brand which has high involvement or a brand which has a low involvement? If yes, what factor influence in getting engaged with brand for both categories
- Do you think that once you get positively engaged with the brand, you get emotionally attached or is it once you get emotional attached, you get engaged with the brand?

To investigate the research question, focus group methodology was used to understand consumer insights on customer engagement and emotional attachment. The sample consisted of 16 participants aged 19 -75 yrs. 10 of the participants were female and

6 of them were male. Incentives were not provided to the respondents. Focus group comprised of 8 individuals each and 2 rounds were conducted. The data was analyzed using content analysis.

FINDINGS

In this section we have tried to summarize some of the key findings of the discussion.

As anticipated product engagement levels played a key role in determining whether a consumer would be engaged or not engaged with a brand.

“I will not think on brands while buying a ceiling fan forget about being engaged..... I don't think I have any emotional attachment with my ceiling fan.... As long it is running, I am happy if there is a concern I would rather go the electrician rather than voicing an opinion against the product on facebook.... I don't think it makes sense”

—Mazumder (35)

“.....of course brand is important when I am going to purchase a laptop... I am very active online.... I love to share my brand experiences with my subscribers ... I would surely not go about sharing my experience with my ceiling fan”

—Seth (40)

For a high involvement product, there is a high probability of a consumer to get emotional attached or engaged with a brand. As can be deduced from the following statement.

“ Of course performance of my laptop should be at par with my expectations. At the end of the day, I am shelling out so much money on this and if its performance is not up to the mark, I will surely raise a concern.... Just imagine the amount of hassle I need to go through without the laptop.... Before buying my laptop, I have done lot of research online to hear the feedback about the brand.... And I have heard only good things.... I am already loving my laptop and have already posted good feedback online Suggested my friend to purchase the same

—Sabani (32)

Age has come out as an important criterion that differentiates the level of engagement for brands. However this aspect we cannot generalize. It is a personal viewpoint.

“... I love working on my laptop.... I use it majorly for trading activities and researching companies but I don't have the time or time or inclination to voice my affection for the brand ... as long as the laptop is working fine I am happy”

—Ghosh (74)

We could also observe a difference in viewpoint on the type of engagement. It was generally observed that occupation of the respondent also had an important role in determining the means of engagement. It was generally observed for a housewife, good level of engagement will involve informing friends and acquaintances about the

experiences. Whereas for a you tuber, a good level of engagement is informing her or his subscribers about the positive experience with the brand.

“... my daughter is doing great in her online class ... I suggested my sister and my friend to go for the same brand”

—Sharma (42)

“..... my editing experience has improved a lot My heads up for the product.... next upload on my channel will be a review on this brand....”

—Sen (45)

Another important aspect that came out as an important finding of the study is that consumer gets emotionally attached to a brand that has personality matching with consumer's self. This supports the research finding of (Malär *et al.* 2011) that emotional brand attachment can be created for brands whose personality matches with consumer self.

“.....I love my laptop as it matches my personality.... Looks sleek and trendy ...love the colour... My friends complement it a lot”

—Roy (19)

In the context of whether emotional attachment leading to customer engagement or customer engagement leading to emotional attachment, some consumers were of the view that emotional attachment to a brand is one of the major drivers that leads to a consumer getting more engaged to a brand

“.....I brought my laptop 2 months back. This I had done after lot of search online about its features and performance of it vs. its contemporaries. I have fabulous experience with my laptop. It is very handy and looks trendy and very comfortable. Just love my laptop ... i have also a recently started letting others know through facebook, youtube, instagram how happy I am with my purchase....”

—Mukherjee (21)

MANAGERIAL IMPLICATIONS

This study provides several propositions for marketing practice, which could be enormous help in gaining more penetration in consumer minds. *It is very important for a marketer to understand the various dimensions of customer engagement and how customers can get emotionally attached to a brand. As this could be an important pedestal for them to reach out to a greater customer base.* A happy customer is one of the most valued asset for an organisation as that could be the starting point of the customer journey of becoming a loyal customer and becoming a promoter for the brand.

IMPLICATIONS FOR FUTURE RESEARCH

This research has highlighted different research propositions and tried to uncover the relationship of the two constructs in the context of product involvement through qualitative research. Future empirical research needs to be done to validate range of

research propositions and the findings of the qualitative research. This study has majorly focused on products in the electronics segment. Future research can focus on services or product category in different segments having different levels of involvement. Our study focused on Indian urban consumers. A sample from rural India will be an interesting aspect to capture. Future work can also focus on studying the construct and understanding its relevance for a different country or in a different business environment.

REFERENCES

- [1] Brodie, R. J., Ilic A., Juric B. and Hollebeck L. (2011), "Consumer Engagement in a Virtual Brand Community: An Exploratory Analysis," *Journal of Business Research*, Vol. 66, pp 105-114.
- [2] Bowlby, J. (1979). *The Making and Breaking of Affectional Bonds*. London: Tavistock.
- [3] Bowlby, J. (1980). *Loss: Sadness and Depression*. New York: Basic Books.
- [4] Cheung, C.M.K., Lee, M.K.O., Jin X. (2011), "Customer Engagement in an Online Social Platform: A Conceptual Model and Scale development", *Thirty Second International Conference on Information Systems, Shanghai*.
- [5] Fournier, Susan (1998), "Consumers and Their Brands: Developing Relationship Theory in Consumer Research," *Journal of Consumer Research*, Vol. 24, pp 343-373.
- [6] Hollebeck, L.D. (2011) "Demystifying customer brand engagement: Exploring the loyalty nexus," *Journal of Marketing Management*, Vol. 27 No. 7/8, pp 785–807.
- [7] Hollebeck, L.D. (2012) "The customer engagement/value interface: An exploratory investigation" *Australasian Marketing Journal*
- [8] Kumar, V., Aksoy, L., Donkers, Bas, Venkatesan, Rajkumar, Wiesel, Thorsten and Tillmanns, Sebastian (2010), "Undervalued or Overvalued Customers: Capturing Total Customer Engagement Value", *Journal of Service Research*, Vol. 13 No. 3, pp 297-310.
- [9] Malär, L., Krohmer, H., Hoyer, W. D., and Nyffenegger, B. (2011), "Emotional Brand Attachment and Brand Personality: The Relative Importance of the Actual and the Ideal Self," *Journal of Marketing*, 75, pp 35 –52
- [10] Thomson, M., MacInnis, D.J. and Park, C.W. (2005), "The ties that bind: measuring the strength of consumers' emotional attachments to brands", *Journal of Consumer Psychology*, Vol. 15 No. 1, pp. 77-91.
- [11] van Doorn, J., Lemon, K.N., Mittal, V., Nass, S., Pick, D.n., Pirner, P., and Verhoef, P.C. (2010), "Customer Engagement Behavior: Theoretical Foundations and Research Directions," *Journal of Service Research*, Vol. 13 No. 3, pp 253-266.

How Do They Pick-up Smoking? Will They Talk about Brands?

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Abstract:

Fear appeal on anti-smoking campaigns is one of the most common strategies used by marketers, citing the literature that fear appeal impacts consumer to reduce/stay away from smoking. Yet, studies have indicated that smokers tend to become immune to the fear appeal after a certain level. In this context, study 1 explores the journey of smokers from the picking up of smoking to their current level, and their perception of the anti-smoking advertisement. Study 2 explores influence of smokers' intention to quit smoking on the positive word of mouth for the cigarette brand. It was found that smokers are well aware of health concerns related to smoking and tend to be immune to anti-smoking campaign. It was also found that the brand loyalty, and marketing mix has positive effect on word of mouth whereas intention to quit smoking has a negative effect on word of mouth for a cigarette brand.

INTRODUCTION

“Smoking Causes Cancer” or “Smoking is injurious to Health” are the phrases which are known to most of the Indians. This can be attributed to the launch of aggressive mass media campaign on bidi-smoking and its association with cardio-vascular diseases by the Ministry of Health and Family Welfare, Government of India (FCTC, 2011). This was the first initiative of the government sponsored mass media campaign anywhere in the world and was developed with technical support from World Lung Foundation.

A comparison of GATS 1 (2009-10) and GATS 2 (2016-17) studies suggest that the percentage of smokers in overall population, and consumption of tobacco has reduced reflecting the results of the efforts of the government towards reducing tobacco and smoking consumption. However, the comparison raises few concerns as well, e.g. average monthly expenditure on Bidis and Cigarettes has increased. Also, though quit attempts in smokers among the age of 25+ has increased from 37.2% to 38.4%; whereas it has reduced from 47.2% to 39.8% among the age group 15-24.

Anti-smoking campaign has led to increase in the quit rates in several countries (enter references), as in India. However as evident that with the current efforts few set of population have behaved differently. The behaviour of few sets of population

being different has been explored to some extent (Niederdeppe, Timothy, Baker, and Smith 2008; Meier, 1999). In this paper, first study is conducted to understand the overall journey of smoking that smokers go through and their attitude and behaviour towards smoking, with an objective to understand their motivations to start smoking and intention to quit. The second study was conducted to understand empirically the relationship between intention to quit smoking and positive word of mouth about cigarette brands.

LITERATURE REVIEW

A review of the anti-smoking ads points out that antismoking ads can reduce underage smoking, but anti-smoking ads should be seen when youths are in grades 5-10, and the ads must be coordinated with intensive antismoking school programs. Also, the short-term costs of smoking (e.g., bad breath), how to refuse cigarette offers, and showing that smoking is not the norm messages helps better (Pechmann, 2018).

The literature on advertising messages related to anti-smoking have looked at varied facets. Role of parents, peers, and siblings on attitudes towards smoking among seventh and eleventh grade students (Meier, 1991) has also been explored. It has been found that smokers had less negative attitude towards smoking than non-smokers. More importantly, seventh grades students had less negative attitude towards smoking than eleventh grade students indicating that youths are more open to try smoking. The attitude towards smoking was negative if sibling smoked but the same was not found for parents. The study also found that very few non-smokers and most of the smokers favoured ban on cigarette advertising.

Effectiveness of the anti-smoking ads has also been questioned, e.g., neither keep-trying-to quit nor second hand smoke ad recall was associated with quit attempts or smoking abstinence (Niederdeppe, Timothy, Baker, and Smith 2008; Meier, 1999). However, the authors also found that keep-trying-to-quit ads were significantly more effective in promoting quit attempts among higher educated populations than lower educated population. No differences were observed for second-hand smoke ads by the smokers' education or income levels. In sum, only keep trying to quit ad was found to be more effective among educated population than non-educated one.

Deception and disgust messages are found to put viewers into a cascade of defensive responses which results in enhanced self-reported unpleasantness, reduced resources allocated to encoding, worsened recognition memory, and dampened emotional responses compared to messages depicting one attribute or neither (Hwang, 2010).

Different theories have been used to explain the mechanism related to smoking and antismoking messages. Excitation Transfer theory and the forbidden fruit theory were tested in the smoking scenes in movies among the 9th grader non-smokers (Pechmann and Shih, 2018). The study posits that when movie scenes elicit high positive arousal, the favourable affect can transfer from the scenes to the smokers that are depicted in those scenes. Excitation transfer theory is evident in case of product placement where

positive impact of movie is transferred to the product. On the other hand Forbidden Fruit thesis suggests that due to smoking being a tabooed phenomenon in the society, on-screen smoking itself evokes positive arousal. Hence young people view smoking as forbidden fruit because they do not understand fully the reasons underlying its prohibitions. Extending this further, the literature has mostly looked at the impact of anti-smoking advertisements through fear appeal.

Likewise, ARI model explains the mechanism of attitude formation. It suggests that attitude formation occurs from rational cognition and affect, which may work simultaneously (Buck et al. 2004). On the other hand, Elaboration Likelihood model (ELM) postulates that attitude formation occurs from either central route to persuasion or peripheral route to persuasions (Petty and Cacioppo, 1986).

Attitude formation and rational is dependent on the lifestyle aspects of the respondents. Most of these studies seem to be on non-smokers (Pechmann & Shih, 1999) or on adolescents/youths (Meier, 1991). However, while in their 20s, those who have picked smoking come to the phase of accepting the fear of smoking as they have heard it multiple time. Hence they get used to the idea of fear at some level, and the impact of fear on their attitude may be an inverted-U curve (Janice, 1967). Hence the first phase of the study was to explore the overall journey of smoking among the 20-35 years of smokers. This is based on the premise that different communication strategy may work at different lifestyle phases of the smoking which is yet to be explored, e.g. reaction of a smoker who has just started smoking may be very different than how a non-smoker would react. In this context, its important to understand different lifestyles, attitude and perception associated with smoking as considered by the smokers.

Hence this study explores the following two questions-

RQ1:

What is the journey of smoking among the smokers?

This question explored individual's accounts of introduction to smoking, individual's beliefs and attitude towards smoking, and individual's account of trial to quit smoking.

RQ2:

How individuals perceive anti-smoking advertisements and their impact on them?

This question explored the anti-smoking advertisement recall, impact of these advertisement, and belief of the respondents for the advertisement being impactful/non-impactful.

This first phase of the study is based on an exploratory approach using semi-structured indepth interviews followed by a quantitative study to understand the habits better. Study 2 is based on empirical evidence on the relationship between intention to quit smoking on positive word of mouth.

STUDY 1

METHODOLOGY

In-depth interviews capture different perspectives and provide deeper understanding of a phenomenon, as Belk noted that in-depth interviews probe more deeply on how an advertisement is regarded by consumers and what meanings they take away (Belk, 2017). This study has used inductive approach of the interview. As Thomas defines that “*inductive analysis refers to approaches that primarily use detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher*” (Thomas 2006). Following this approach, data from the respondent on their journey of smoking and perception about anti-smoking advertisements was collected, and the same is interpreted to understand the patterns in smoking behavior.

Qualitative study with 20 respondents, between the ages of 20-30 years was conducted. A semi-structured interview format was used to elicit the responses. These interviews were conducted with the support of an interview guide. The interviews lasted about half an hour, on average, and were recorded. Out of these 20 respondents 14 belonged to urban region, 4 belonged to semi-urban region, and 2 belonged to rural region. Thirteen respondents smoked around 5-6 cigarettes daily. Three respondents smoked 20 cigarettes per day while four respondents smoked 10 cigarettes per day. Average spend on cigarettes was found to be INR 110 per day.

RESULTS

The Beginning of the Journey

Here the author asked respondents about what triggered them to start smoking. Most of the respondent mentioned that they started smoking from their teenage (11th or 12th class) to early 20s. The reasons to start smoking were different, which has been discussed below

Environment among peers and curiosity were major triggers to start smoking, e.g.,

“It was more of party kind of environment, it was sudden kind of impulse wanted to try once, so that’s how it started, out of curiosity, while in party, wanted to be a part of the group of friends who were smoking”.

Another respondent mentioned that “I had curiosity, I wanted to try after alcohol”.

Few other respondents mentioned that “I was compelled to smoke by senior as part of ragging, at first I felt a different and I liked it, later on when I was chit chatting with friends I used to smoke, later continued to be part of the group”

“My Friends ask to smoke for the first, I was little hesitant and later on I acquired the taste; then continued to smoke just a be part of the group”.

“My friends asked me to smoke so I was little hesitant but later I acquired the taste”,

“Everyone was smoking so I also wanted to join the group,” “I want to be a part of my friends’ group “

“Basically, my friends started smoking and they handed over me a cigarette to try once, so I tried once and continued with that”

“Many of my friend were smoking so I felt left out, so I also started smoking.”

“Curiosity to try, friends were smoking so I also wanted smoking”

“This was Out of curiosity, I was at a party and wanted to be a part of the group so I started a puff”. While in party, I wanted to be a part of the group”.

“While I started first, I was sure that I won’t be continuing it, it’s not something I wanted to do it, even today it’s because of the setup I am in I tend to smoke”

“It was a party and we all friend has smoke before that I had few instances where in my friends were smoking and I used to light up incense sticks, but later I started smoking, Later, it was a break that influence me to smoke. “break up with girlfriend”

“I saw so many heroes in the movie who used to smoke. I got fascinated by them, and hence started smoking”

Majority of our respondents said that they started smoking after peer pressure. Three major reasons seemed to be group conformity e.g. acceptance by seniors, friends group, curiosity e.g. trying after alcohol, and peer pressure e.g. acceptance by seniors, friends group.

Motivation for trial to quit/or quitting is another aspect in smoking. Most of our respondents tried to quit smoking, but again started back smoking due to various reasons, few are mentioned below

Respondents, when came back to study again i.e. their environment changed, they restarted the smoking even when they had quit. One of the respondents mentioned that -

“Quit, I wanted to be more conscious about my health, so I quit for two years, then I realize all of sudden that I should focus on health, I was obese then, I wanted to be healthy so I started gyming, I need stamina so I quit smoking, I wanted a fresh start in my life so I wanted to flush out all the negative things in my life but was back then in job life, but started smoking as I came back to student life.”

“I attempted to quit smoking and I have not smoked for almost 6 months, then I joined college then I started smoking again.”

“Yes, I quit smoking for 3 years, the point is that I was at home and working from home in hyderbad, that time never used smoke that much, once I tried a smoke and felt like puking and

couldn't take it, that was when I felt if you give a long time, I know that I can quit smoking anytime because I have gone through that"

Respondents have tried to quit, but restarted when went back to environment of friends who smoke, e.g.,

"Yes, I have tried multiple times, first time it lasted for 7 days and next time, it lasted for three months but again started while drinking, friends around me were smoking so I also started"

"Yes, I have tried to quit smoking, and was successful for 1 month but then there was a time where I had to go for a party and probably, I thought, I won't be that bad, so again started smoking while in a party"

Another reason was to stimulate the brain for mental work, e.g.

"Yes, I have decided for a week I should not smoke but was unable to do my tasks. If you ask me to do any mechanical stuff with smoking, I think I can do it (Which doesn't involve thinking), at some point I felt I can't go beyond particular point without smoking, I need smoking to do thinking activities"

Unavailability of cigarettes or scared of parents, also came out as one of the major reasons, e.g., "Yes, obviously why not, When I am at home, I even forget what a cigarette is, I have attempted that part, When I am alone, I don't find urge to smoke but when I am with friends I would like to smoking. I start again when I am with my friends"

"Yeah, I tried to quit smoking, When I am at home have nothing to do much, I watch Tv and sit at home, I don't have motivation to home/ started back gain when met with friends in school"

There were few respondents who were very clear that they did not want to quit smoking. Most of the reasons provided by them are -

"Never felt to quit smoking. It just became a habit"

"As of now not yet, I see many old people who still smoke, so think nothing will happen to me also"

"I don't feel that, myself as person who can't quit smoking, I feel that just for enjoyment I smoke, I don't feel I am addicted to it. Since I am in college, I feel like this might be the last time I will be with my friends, so sometimes I smoke be a part of the group, occasionally not a problem"

Motivations to continue smoking involves that it is a routine activity where smoking has become part of life. Few excerpts-

"Smoking has become such an addiction that, though personally for me it's not like I can't live without it. Obviously, I can live without smoking. <But> it is smoothing like after having lunch and after having dinner and full stomach automatically your mind directs you to have a smoke"

“If I have back to back classes and if I am busy with some work then obviously <I> will forget about the smoking, but if I am doing nothing and when my mind is free then at that time I smoke, mostly I am a lone smoker, I prefer to smoke lonely”.

Most of the respondents mentions that smoking relieves them from stress and reduces anxiety. Below are few excerpts:

- “At work I smoke for two reasons first one is due to stress and too much of work than Smoking acts as stress buster and other one is during the breaks after meetings to revise energy, mentally smoking has a significant impact for me, efficiency increases. if I am feeling down after lot of work and when I am distressed than I want motivation or something , then if I smoke that gives me a mental satisfaction and I am able to do my work again, at times it happens like till late night I need to wake up for something or other than it reenergizes my energy.”
- “There are no reasons for smoking, basically once in three hours I smoke. I personally feel that smoking is controlling my anxiety but it’s not like that, it’s not a reason to smoke but it’s there in my mind that it controls the anxiety. If I have a problem than I go and smoke, for that time being at least for 10 minutes I forget about the problem.”
- “There is no perfect situation, like if at all I am not doing anything then I don’t smoke but sometimes for break when I am studying or playing a game, especially when I am playing a game there is lot of stress than I always look forward for doing something, When I have to do late night studies I smoke for every hour, the more I smoke the late I would wake up. Also, smoke is also easy to access when compare to coffee.”
- “There is no specific situation but yes there are sometimes when I am not feeling good, like when there is a lot of pressure, I want to smoke at that time I know it doesn’t help me but that is one situation it craves me to smoke. It’s just a mental satisfaction and more convenient over coffee”

The reasons for the stress is continuous studying and long working hours, and immediate availability of cigarettes as compared to coffee.

Awareness and Perception of Anti-smoking Advertisement: Most Respondents are Aware of the Advertisement

Most of the antismoking ads had no impact on the smokers, even if they impacted it was for a fraction of time, e.g., *“Personally I feel they do impact for a fraction of second, maybe I am doing wrong, I feel I am doing wrong when I am seeing these disclaimers but it doesn’t last for long time, its just a temporary impact”*

Few of the respondents thinks that these ads are run just for Government mandate and those doesn’t impact them in anyway, e.g.,

“See basically as far as I know disclaimers doesn’t have any impact on smoking , because as said you people start smoking at very young age like 18 or 19, that will be because not seeing disclaimers more than the disclaimers they see the characters in the

movies who are smoking, so they get very influenced, in the movies they portray these characters in such a way that it is very cool to smoke, when a donor hero smokes in a half a coat people perceive it to be very cool and then they get into smoking that is how generally people get into smoking, disclaimers later doesn't have much impact if you see at starting we used to get a cigarette for 5 or 6 rupees but now its 16 rupees if you see now number of smokers have been increasing so now when increasing the price is not impact I don't think anything will impact. These ads just mandated by government if govt want to stop smoking they should stop manufacturing these cigarettes but that is not happening if that is not happening these ads are useless"

Few of respondents also thinks that these ads don't impact them but these are very useful for the nonsmokers to caution them.

- "It never impacts me in a positive way, it won't change me but I feel that those particular advertisements are for people who are non-smokers to make them confirm that this is bad, so indirectly these will make other to think that this bad and since the people whom I hang out with majority would be nonsmokers so its branding that smoking is bad to the non-smokers, so whenever I be with them I will also think bad about it" my view no smoking might impact when I am with non-smokers but it's not gonna change my smoking habit or the quantity I smoke."
- "These disclaimers are very good these should be there because most of the kids when they start smoking are in teenagers they start smoking because their idols and role models start smoking onscreen, think it as a coolness symbol that is why they start smoking, these disclaimers are really helpful to not do it. Impactful for non-smokers, not for me"

Overall, most of the smokers have picked up smoking when they got more freedom/independence due to moving to other places. Based on the instances given it seems that anti-smoking angles came in the life of the respondents only after they have already gotten used to smoking. Major reasons to start smoking was out of curiosity or to be associated with a group. However, once respondent get used to it, then it becomes difficult for them to switch.

All the smokers were well aware of health concerns associated with smoking and most of the smokers have tried to quit smoking. However, most of them have failed. Due to multiple to awareness about health concerns and trial to quit smoking, these smokers slowly became immune to the anti-smoking campaign thus feeling that these ads are also just part of life. Therefore, another angle to look at is how much these smokers are talking about the cigarette's brands to others. Hence, a study was further conducted to understand the intention to quit smoking on positive word of mouth of the brand.

STUDY 2

The literature shows that word of mouth for products/services is positively influenced by brand loyalty and marketing mix variables like advertising and promotions.

The product category researched in this paper is cigarette. This is a product different than the other fast moving consumer goods as the consumption of cigarette is harmful for one's health. People still consume cigarette because of various reasons like style, release of work tension and under addiction. In this paper, apart from marketing mix variables and brand loyalty, a new factor has been introduced called Intention to quit smoking. This factor unlike other two factors negatively influences the positive word of mouth behaviour of consumers in the market. The reason for this phenomenon can be attributed to the understanding of the consumers consuming the cigarette that its consumption is harmful for human health.

FRAMEWORK

Word of mouth is considered to be one of the most powerful tools affecting the brand choice of the consumers. It refers to the process of passing of information about brands and products from one consumer to the other. There exists two kinds of word of mouth behaviour: (i) positive when information passed from a consumer about a brand or product leads the other consumer to consider that brand, and (ii) negative word of mouth which leads the consumer to withdraw himself/herself from considering or buying that product.

Brand loyalty can be fostered in consumers by positive word of mouth. But this relationship holds vice versa too. One of the important behavioral consequences of loyalty discussed in recent times is that more a consumer is loyal to a brand more are the chances of his/her to spread positive word of mouth (Dick & Basu, 1994; Srinivasan, Anderson & Ponnayolu, 2002; Gounaris & Stathakopoulos, 2004).

Marketing mix variables consist of advertising and promotions. Word of mouth is considered as a type of advertising. The influence of Advertising is not always direct on the consumers. The effect of advertising is moderated at times by word of mouth. It is recognized as one of the strongest single predictor of company's growth (Reichheld, 2003). Power of word of mouth and the money spent on advertising is called as contradiction by Gladwell (Graham & Havlena, 2007)). The contradiction was explained by contrasting what marketers actually implement (buy advertising spots) and believe (WOM drives purchases). The explanation is that there is a two-step approach wherein mass communication drives person to person influence. They showed that by disseminating brand advertising persuades consumers to talk more about the brand. The ripple effect described by Hogan, Leban & Lebai (2004) explains the extent to which effect of advertising is extended by word of mouth communication. They argued that ignoring this ripple effect may under estimate the effectiveness of a campaign. Thus we can conclude that advertising and promotions leads to word of mouth communication.

Intention to Quit smoking gets formed because of the very nature of the product. In literature non acceptability of smoking (Sorensen, Emmons, Stoddard, Linnan & Avrunin, 2002), pressure to quit from people outside your work setting like parents,

wife and children and self efficacy (Willemssen, De Vries, Van Breukelen & Oldenburg, 1996) have been found as some major factors influencing the intention to quit smoking.

Conceptual Model

Based on the literature studied, we formed the below conceptual model:

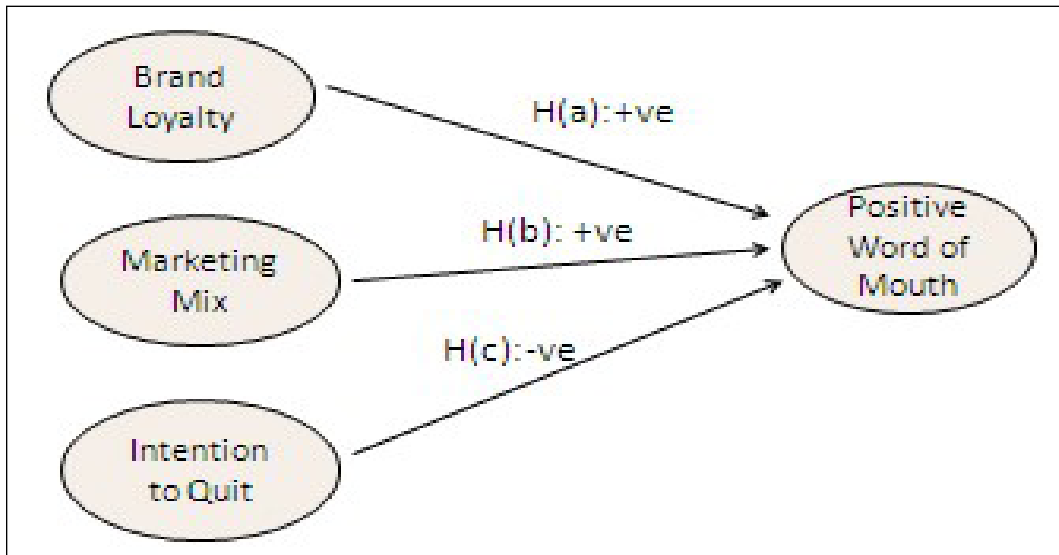


Fig. 1

H (a): Increase in brand loyalty would increase positive word of mouth behaviour by the consumers in the market

H (b): Increase in advertising & promotion would increase positive word of mouth behaviour by the consumers in the market

H (c): Increase in intention to quit smoking would reduce positive word of mouth behaviour by the consumers in the market

Data Collection

To collect the information on factors used for this study, a questionnaire was administered in a post graduate management institute in India. The data was collected only from those students who smoke.

The questionnaire consist various items for each factor required for our study. The items were to be marked on a 5 point scale ranging from strongly agree to strongly disagree. All negative items were reverse coded for the final analysis.

90% of the students were in the age group of 21-30 years. 21.3% had an annual family income below Rs 3 lakhs and 55.7% had between Rs 3 lakhs to 10 lakhs. Around 50% of them bought 1-3 packs a week, 36% between 4-10 packs and rest bought more than 10 packs a week.

Methodology

The data was collected from 61 students. A linear regression was performed on the data collected. The indicators for each construct were averaged i.e. summated scale technique was used to arrive for the values of the factors. And later SPSS 20 was used to perform a linear regression on the constructs.

The indicators of positive word of mouth were captured using the following statements (i) My cigarette shop owner always recommends me new brands of cigarettes (ii) I am always recommended cigarette brands by my peers, friends & family and (iii) always recommend the cigarette brand I like to others.

To capture the indicators of brand loyalty the following two statements were used (i) If my favourite brand is not available, I buy another one and (ii) I am ready to visit a number of shops to find my favourite brand

As direct advertising of cigarettes is banned in India (Chaudhary, Chaudhary & Chaudhary, 2007), the only way of communication for these products is point of purchase communication (promotion etc.) and surrogate advertising. Therefore Marketing Mix factor consisted of indicators for surrogate advertising^{*1}, point of sales advertising and promotions. The statements were as follows (i) Recently, I saw a print ad of cigarette in a magazine (ii) Recently, I saw a brand of cigarette being promoted on a hoarding (iii) I saw an ad of a cigarette brand on the walls outside the cigarette shop (iv) I saw the cigarettes packs being displayed in the cigarette shop (v) I buy the cigarette brand which gives me free gifts or lucky draw schemes

Intention to Quit is mostly not self driven by the smokers but by the influence of others around the smokers as well as their societal values. Hence the following statements were used to capture the above indicators- (i) I am trying hard to quit smoking (ii) My friend objects to my smoking habit (iii) My family members want me to quit smoking (iv) I encourage my peers/friends to take up smoking (v) I think smoking is considered acceptable in society.

Results

The output of regression model is –

$$\text{WOM} = \beta_1 \text{Int_Quit} + \beta_2 \text{Mktg_Mix} + \beta_3 \text{Brand_Loy} + \epsilon$$

Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Collinearity Statistics	
	B	Std. Error			T	VIF
(Constant)	2.845	1.043		2.727		
Int_Quit	-0.269	0.263	-0.133	-1.021	0.958	1.044
Mktg_Mix	0.156	0.176	0.114	0.887	0.978	1.023
Brand_Loy	0.301	0.172	0.226	1.749	0.969	1.032

^{1*}Surrogate advertising is done by introducing another product like cassettes, soda, water, fashion clothing, sports equipment or sponsoring events like award functions and at time social causes under the brand name of the products (liquor & tobacco) that have been banned from being advertised. These help consumer to recall those products which are banned for advertising. They are able to sustain the government regulation on the pretext of brand extensions (FE, 2005).

Durbin Watson statistics is 1.80 which is close to 2 indicating that there exists no heteroscedasticity in data. The VIF and tolerance clearly shows that there is no multicollinearity in the data collected. As hypothesized the sign of beta coefficients of Brand Loyalty and Marketing Mix are positive. Their beta coefficients are .22 & .14 respectively. Intention to quit has negative beta coefficient (-0.133) as hypothesized. The t-value of marketing mix factor is low but we feel that it can be improved by including some other indicators. Hence we can say that H(a) and H(c) are supported with our data but due to low significance level H(b) is not supported. However in the literature support for the positive relation of marketing mix and word of mouth can be easily found.

The R-square value comes to be 8%. The low value of R-square can be explained by the fact that one of the most important factors i.e. usage level of the product which lead to strong word of mouth has been left out in the proposed model.

DISCUSSION

From study 1 it is inferred that apart from campaigning on anti-smoking, it is important to reach the audience at early teen age to prevent the beginning of the smoking journey itself which has been argued earlier as well (Pechmann, 2018). Also, people have mentioned that fear appeal may not work especially for smokers, and if it does work it is only for a very short time period to remain effective. It may work more for non-smokers (and those with smoking intentions) whereas humor appeal may work for those who are smokers only because smokers tend to reach to a threshold of fear appeal which is well described as inverted U curve of response to fear appeal.

Most of the respondents have at some point tried quit smoking. It can be inferred that increase in intention to quit smoking leads the consumers to talk less about the cigarette brands that they are loyal to. But it is important to note that this study does not capture the influence of increase in intention to quit smoking on negative word of mouth. There might be an increase or no effect on the negative word of mouth which can be an area to explore further.

The result explains the government and special interest groups' efforts put in creating social messages which can increase the level of intention to quit smoking in the consumers. However, the social messages can be targeted not only on the individuals who smoke but also on others who can help the smokers to develop this intention like peer group, friends and family. So, one of the major points to focus on could be that the peers (non-smokers) and family members could be greater ways to tell people to quit smoking than targeting the smokers directly. This would at least help in decreasing the spread of positive word of mouth about smoking. Messaging strategy in anti-smoking can be about the friends and family members can influence the smokers to quit smoking.

REFERENCES

- [1] Belk, R.W. (2017). Qualitative research in advertising. *Journal of Advertising*, 46(1), 36-47.
- [2] Buck, R., Anderson, E., Chaudhuri, A., & Ray, I. (2004). Emotion and Reason in Persuasion: Applying the ARI Model and the CASC Scale, *Journal of Business Research*, 57 (6), 647–56.
- [3] Chaudhry, S., & Chaudhry, K. (2007). Point of sale tobacco advertisements in India. *Indian Journal of Cancer*, 44(4), 131.
- [4] Dick, A.S., & Basu, K. (1994). Customer loyalty: toward an integrated conceptual framework. *Journal of the Academy of Marketing Science*, 22(2), 99-113.
- [5] FTCT (2011), WHO Framework Convention on Tobacco Control <https://www.who.int/fctc/implementation/news/indianews/en/>, retrieved on 19/09/2019.
- [6] FE (2005). Article on Brand Extension not Surrogate Advertising: I&B in Financial Express, April 2005. (<http://www.financialexpress.com/news/Brand-extension-not-surrogateadvertising-I&B/131864/>)
- [7] GATS (2010), https://www.who.int/tobacco/surveillance/en/tfi_india_gats_fact_sheet.pdf, retrieved on 19/19/2019
- [8] GATS (2017), https://www.who.int/tobacco/surveillance/survey/gats/GATS_India_201617_FactSheet.pdf, retrieved on 19/19/2019
- [9] Gounaris, S & Stathakopoulos, V. (2004). Antecedents and consequences of brand loyalty: An empirical study. *Journal of Brand Management* (2004), 11(4), 283-306
- [10] Graham, J. & Havlena, W. (2007), Finding the “missing link”: Advertising’s impact on word of mouth, web searches and site visits, *Journal of Advertising Research*, 47 (4), 427-435.
- [11] Hwang, Y. (2010). Selective exposure and selective perception of anti-tobacco campaign messages: the impacts of campaign exposure on selective perception. *Health Communication*, 25(2), 182-190.
- [12] Janis, I. L. (1967). Effects of fear arousal on attitude change: Recent developments in theory and experimental research. In *Advances in Experimental Social Psychology* (Vol. 3, pp. 166-224). Academic Press.
- [13] Meier, K.S. (1991). Tobacco Truths: The Impact of Role Models on Children’s Attitudes toward Smoking. *Health Education Quarterly*, 18(2), 173–182.
- [14] Niederdeppe, J., Fiore, M.C., Baker, T. B., & Smith, S. S. (2008). Smoking-cessation media campaigns and their effectiveness among socioeconomically advantaged and disadvantaged populations. *American Journal of Public Health*, 98(5), 916-924.
- [15] Pechmann, C., & Shih, C.F. (1999). Smoking scenes in movies and antismoking advertisements before movies: effects on youth. *The Journal of Marketing*, 63 (3), 1-13.
- [16] Pechmann, C. (2018). Does antismoking advertising combat underage smoking? A review of past practices and research. In *Social Marketing* (pp. 189-216). Psychology Press.
- [17] Phua, J., Jin, S.V., & Hahm, J.M. (2018). Celebrity-endorsed e-cigarette brand Instagram advertisements: Effects on young adults’ attitudes towards e-cigarettes and smoking intentions. *Journal of Health Psychology*, 23(4), 550-560.
- [18] Petty, Richard E., and John T. Cacioppo (1986). The Elaboration Likelihood Model of Persuasion, in *Advances in Experimental Social Psychology*, Leonard Berkowitz, ed., *New York: Academic Press*, 123–205.

- [19] Reichheld, F.F. (2003). The one number you need to grow. *Harvard Business Review*, 81(12), 46-55.
- [20] Sorensen, G.; Emmons, K., Stoddard AM., Linnan L. & Avrunin, J. (2002). Do social influences contribute to occupational differences in quitting smoking and attitudes toward quitting?. *American Journal of Health Promotion*, Vol 16(3), 135-141
- [21] Srinivasan, S., Anderson, R. & Ponnnavolu K., (2002). Customer loyalty in e-commerce: an exploration of its antecedents and consequences, *Journal of Retailing*. Volume 78 (1), pp 4150.
- [22] Schmuck, Desiree, Matthes, Jorg, and Brigitte, Naderer (2018). Misleading Consumers with Green Advertising? An Affect–Reason–Involvement Account of Greenwashing Effects in Environmental Advertising, *Journal of Advertising*, 0 (0), 1-19. DOI: 10.1080/00913367.2018.1452652
- [23] Thomas, D.R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237-246.
- [24] Willemsen, MC; De Vries, H.; Van Breukelen, G. & Oldenburg, B. (1996). Determinants of intention to quit smoking among Dutch employees: the influence of the social environment. *Preventive Medicine*, Vol 25(2), pp 195-202.

Looking Beyond the Pandemic: Adoption of Industry 4.0 in Manufacturing Industries

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Abstract:

The global instability created by the COVID-19 pandemic has thrown the world into a deep crisis, leading to critical shortages of essential goods, disruptions in the manufacturing sector, and logistical challenges created by supply chains, that still continues to unfold. To increase their capacity of beds, supplies, trained workers, and healthcare systems are working on a war footing. This has put a significant impact on individual health, financial markets, real economic activity, and political and social systems. During the Covid-19 pandemic period, when the whole world is affected, some manufacturing companies have completely halted their productions, some saw a decrease in demand, while few companies saw a massive increase in demand or some altogether new industries have cropped up in various sectors bringing out the innovation and survival side of humans. A considerable number of documents have been published, in areas of innovation, businesses, human suffering, in the academic world, during the pandemic. In recent years, industrial productions around the world are being transformed by a high level of emerging technologies. The objective of this study is to observe the usage of I4.0 in pandemic times and their rate of adoption in post-pandemic time

Keywords: Industry 4.0, Pandemic, Adoption Rate, Vos Viewer, Bibliographic Analysis.

INTRODUCTION

The term Industry 4.0 was used for the first time, at the renowned Hannover Messe trade fair (Madsen 2019), Germany in 2011, leading to digitization and automation of industries and transforming the way they perform (Pfeiffer, 2017), (Mubarak, 2020) (Penprase, 2018), (Farhan, 2020). The technologies associated with it like artificial intelligence (AI), Blockchain, 3-D printing, quantum computing, robotics, and the Industrial Internet of things (IIoT)(Omat Y2019), are paving the way to smart factories and providing immense opportunities for organizations, to digitalize and automate their manufacturing environments. Industry 4.0 is a new accelerating trend(McKinsey 2020), that links the industry through radical changes in production processes (Karadayi 2019) that includes features such as distributed intelligence, safe value-

creation networks, digital life cycle management, virtual real-time representation, open standards, fast integration, and flexible configuration, with individuals as key players (Industry 4.0, Bosch, 2018). Machines are being fitted with smart technologies, which requires heavy investments and financial decisions in the decision-making process. Simple everyday decisions such as reviews on restaurants, movies, and complex ones like weather information, industrial operational issues such as production schedules, safety, and security, etc. all are now data-driven (McKinsey, Big Data Report 2016). Algorithms are being used for data analysis to analyze real-time data, and numerous quantitative tools have been developed for optimization models, approaches, to make the decision process more effective.

- The transformation of I4.0 is being possible due to:
- New approaches to connect the production process to cyber-physical systems.
- New investments to develop technology, facilities, materials, and improving the skills of labor (Flynn *et al.*, 2017)
- Smart manufacturing through sensors, for data collection and data processing, use of advanced robots for production processes (Alabi 2020), cloud computing, big data (Alabi 2020), analytics, IIoT (Industrial Internet of Things) (Wagner *et al.*, 2017)
- Human-machine interactions (Wagner *et al.*, 2017)
- 3D printing- from prototyping to actual manufacturing processes.
- Human-machine interactions (virtual and augmented reality) (Wagner *et al.*, 2017)
- Smart robots and cybersecurity.

There is a significant number of challenges, with respect to the adaption of Industry 4.0. They are huge integration costs, integration, adaption into existing businesses, high investments, concerns with regard to privacy, surveillance and mistrust, inability to change by stakeholders, fear of job losses, and shift of conventional jobs, to IT and technology-oriented employees.

The focus of the manufacturing businesses, prior to the covid-19 crisis, was on adopting automation, for gaining competitive advantage and improving productivity, through I4.0 technologies. In the post-crisis environment, businesses are paying more attention to cost reduction, safe and secure environment, sustainable production, and innovation for survival. In the COVID19 times, the primary intention has shifted to improve the well-functioning and safety of the businesses. Many of the investments in the businesses who have earlier planned to adopt Industry 4.0 norms, due to the present pandemic scenario and financial restraints, are either currently being canceled, stalled, or categorized as unnecessary investments (Czifra 2020). Now the manufacturers are

focusing, mostly on the survival of the businesses and on reducing the devastation or damage caused by the pandemic (Czifra 2020).

The situation raises the following questions:

(a) Is I4.0 still relevant?

(b) What will be its role in the future? Industry 4.0 (Maresova 2018, focuses on combining advanced manufacturing and information technologies (Dowd 2020), to meet the customized needs of various industries and people in less time (Javaid et.al 2020). Mostly all countries have been affected by the pandemic, which has made a major impact on the functioning and survival of states, individuals, businesses, and healthcare systems. Suddenly, it becomes necessary for the adoption of advanced technologies, to monitor the well-being of employees (McKinsey 2020), through safe distancing and remote collaboration, by the companies.

According to a market research study of Deloitte 2020, IoT related software and hardware spending is expected to grow rapidly, across the globe from US\$726 billion in 2019 to US\$1.1 trillion in 2023. Asia/Pacific accounted for the majority of the spending on IoT expenditure, with India spending US\$20.6 billion (Delliotte 2020). The objective to collaborate, communicate and co-innovate, has further pushed the businesses to move towards Industry 4.0.

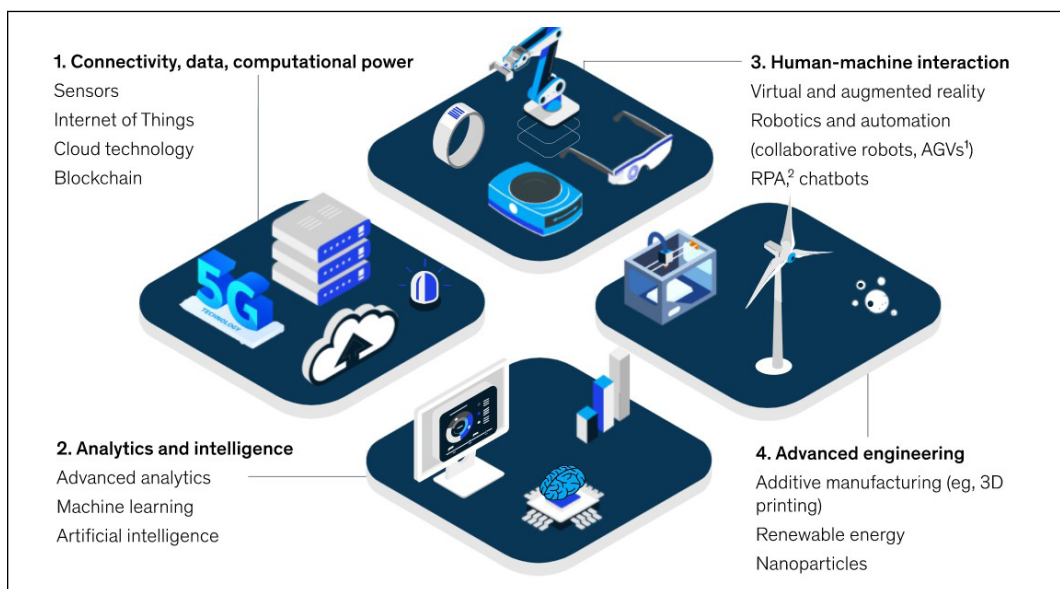


Fig. 1: Reimagining Manufacturing Operations after Covid-19

Source: Mc-Kinsey 2020

This study tries to: (1) examine the research trends, themes, literature work of various authors, during the pandemic period, 2020 (2), and to the reimagining of the workspaces, post-pandemic.

There are four sections in this paper. The first section looks into the application of I4.0 technologies, during the pandemic period. Section two will analyze the literature review during the pandemic period and section three will look into the rate of adoption of Industry 4.0 by manufacturing industries (A.C.Pereira 2018), post-pandemic. Section four is the conclusion and analysis of (S. Tiwari 2019) observations.

LITERATURE REVIEW

Industry 4.0 has a tremendous capacity (Micheal S 2020), to improvise the manufacturing processes, revolutionize and innovate new products, improve the stakeholders' concerns, thereby offering revolutionizing the ways to work in the value chain (Pereira 2017) (Foidl et al 2016). A. C. Pereira 2017 argued that, through improved digitization and automation of the manufacturing systems, and development of digital value chain a new industrial paradigm can be created. Laura Agostini *et al.*, 2019 stressed that the application of Advanced Manufacturing Technologies (AMT) will bring transformation in the way the services are offered to customers and the organization itself. The human-machine interface is causing significant changes, the way workers should interact (Kagermann 2013). In his report McKinsey (2015) termed Industry 4.0, as the next phase of digitization, where disruptions will be driven through the generation of huge volumes of data, giving rise to analytics and business intelligence capabilities, computational power, and connectivity, augmented-reality systems, and human-machine interactions like touch interface, digital instructions, (McKinsey 2020) advanced robotics, and 3-D printing. Industry 4.0 is leading to increasing globalization, international competitions, leading to social and regional inequalities, and thereby complexing the situations (Masaru, 2018), and various industries are embracing digital technologies at a faster pace to automate and modernize their whole processes (McKinsey, 2015). IoT is a novel paradigm that is increasingly gaining (Leung 2011) ground in the scenario of modern wireless telecommunications. IoT can be defined as people, manufacturing systems, and IT networks, creating a smart manufacturing environment creating a smart factory (Pereira 2017). Advanced Manufacturing Technologies (AMT) s are hardware-based i.e., computer-controlled, advanced industrial robots, aided by software-based i.e., chip-based with RFID tagging, a cluster of technologies, linked to advanced computing technologies (Agostini, L.,2018), integrating and controlling the manufacturing processes with the people (Lara Agostini 2018) and with Additive manufacturing the transportation and logistics problems are further reducing (Oettmeier & Hofmann, 2017). There is an increasing need for wearable technology devices that give information regarding health and fitness, which are hands-free gadgets with practical uses, powered by microprocessors, and enhanced with the ability to send and receive data (Data Bridge 2020) (eg., Smart fitness devices, google glasses, smartwatches, etc.,). Implement Industry 4.0 in an organization, will require

horizontal, vertical, and end-to-end integration (S. Wang, Wan, Li *et al.*, 2016). Earlier studies have shown that the introduction of Industry 4.0, will ensure profitability for the organizations (Satoglu *et al.*, 2018) in the long run (Micheal Sony 2019).

APPLICATION OF I4.0 TECHNOLOGIES IN THE PANDEMIC

During the pandemic period, the application of advanced digital technologies was seen to create, innovative solutions, helping the people to do daily tasks during the lockdown. Manufacturing organizations have deployed security cameras and provided wearables devices to track and monitor employees' activities and their health. Industry 4.0 uses AI, IoT, and other digital technologies to provide real-time information. Artificial intelligence is being used to analyze the risk of spreading the infection and screening of the population, drones were used for surveillance.

Big data was used for analyzing the spreading and impact of coronavirus on people (Mohd Javaid 2020), and to identify the persons, whether they are wearing masks, contact screening (Q. Jia 2020) coming in contact with the patients, and proper quarantine rules were followed. IoT devices and analytics, and robotic based treatment are ensuring a safe work environment, to treat the infected patient, without imposing risks to the health of doctors and healthcare workers.

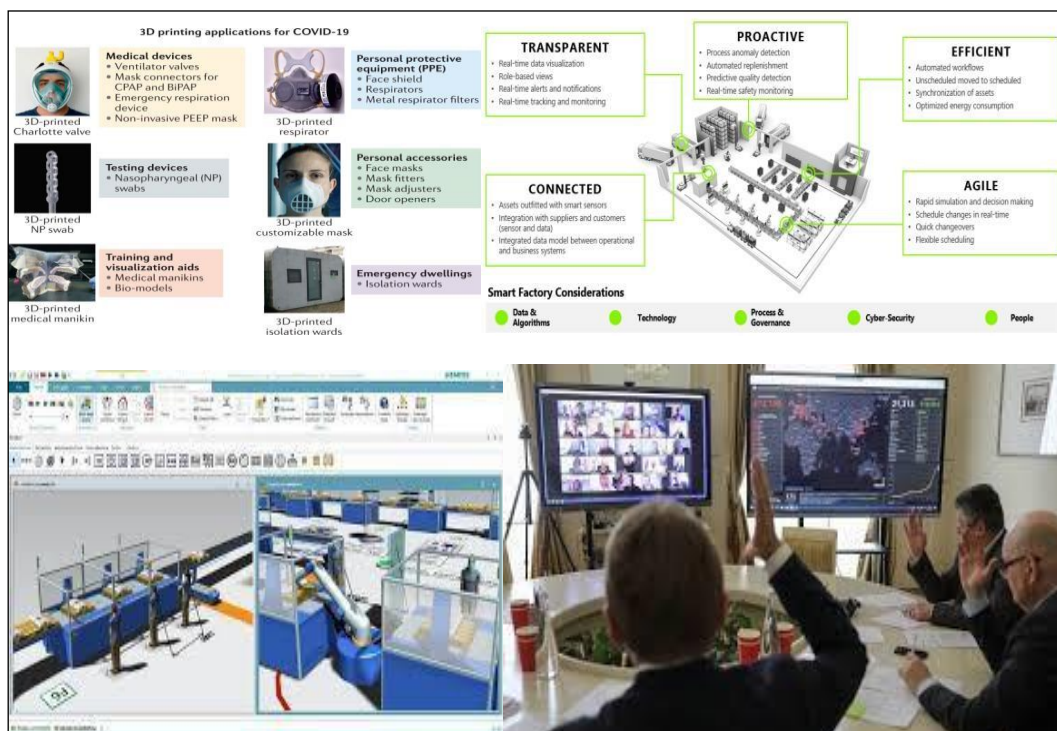


Fig. 2: Usage of I4.0 Equipment's during the COVID-19 Period

Due to supply chain disruptions, companies are focusing, more and more on, sensor-based smart chips, AI-based demand-sensing algorithms, real-time location systems, etc. to develop real-time supply chain visibility and demand sensing production processes to improve their distribution network (Chirag Kalaria 2019). Processing data at each stage has helped organizations with quality control and enabled operators to take corrective actions in real-time (Akyar 2012). With the help of IoT, organizations can now focus to ensure a safe working environment and their employees' well-being. Amid the COVID-19 outbreak, and in the lockdown periods of social isolation, people were able to continue their work, studies, communication, and entertainment, with the help of digital applications, (Mohd Javaid et al 2020) such as Google Meets, Webex, Zoom, Amazon Web, Netflix, Microsoft Azure, and Google Cloud (Mohd Javaid et al 2020), for providing uninterrupted services for distance education, remote and for open educational learning. Few compelling reasons why organizations are using IoT technologies are to reduce cost and/or increase revenue, enhance automation, improve safety and security, and product quality. With the help of Hologram services, the businesses could launch their products virtually, through their 3D-images (Javaid 2020), paving a novel manner, to conduct webinars and live events, thereby ensuring minimum exposure of the resource-persons, workers, and consumers.

NEED FOR THE STUDY

Covid-19 had a devastating effect on the economies of the countries, an unrecoverable effect on businesses, and a psychological effect on population due to long isolation. To facilitate the understandability of the Industry 4.0 concept, prior scholars tend to describe this phenomenon based on its technology trends (Gilchrist, 2016; Zheng *et al.*, 2018). Ghobakhloo Morteza (2018) explains that Industry 4.0 is a systemized knowledge, which allows manufacturers to anticipate the progress of Industry 4.0 (Curran R 2021), and how to acquire that knowledge in providing solutions required for industry transition. Technology trends simply refer to the advanced digital technological innovations that, collectively, enable the emergence of the new digital industrial technology, known as Industry 4.0 (Morteza 2018). This study aims to map the academic work done by various academicians in the pandemic crisis in the field of innovation, I4.0, smart technologies, and the survival of the fittest. To obtain a holistic view of the adoption of I4.0 technology, during the pandemic period, a scientific method is essential to understand the research work done by eminent scholars in various fields. Here are some areas in which authors have worked:

Table 1: Literature Review in Pandemic Period 2020 on Industry 4.0

Author	Title	Industry	Usage
Alber Manero (2020), MDPI	“Leveraging 3D Printing Capacity in Times of Crisis: Recommendations for COVID-19 Distributed Manufacturing for Medical Equipment Rapid Response”	3-D Printing, Health-care	‘Global supply chains,’ ‘face shields,’ ‘ventilator components,’ 3D-printed equipment.
Tobias Mueller 2020, MDPI	“The Unprecedented Rise of 3D Printing during the COVID-19 Pandemic—A Case Study, Lessons Learned, and Implications on the Future of Global Decentralized Manufacturing”	Health Systems,	3D FFF printing, PPE kits, mass production, zero-lead time, quality measurement.
Zainal Ilmi, Dio Caisa Darma, 2020,	“Independence in Learning, Education Management, and Industry 4.0: Habitat Indonesia during COVID-19”	Education, IIOT,	Distance learning, (Ilmi 2020) educational management, and challenges in industry 4.0, Google Meets application, Zoom, Google Classroom, Youtube,
Morteza Ghobakhloo, Cleaner Production 2020	“Industry 4.0, Digitization, and Opportunities for Sustainability”	Sustainability, Supply chain	ISM technique, Sustainability, Six Sigma
Dmitry Ivanov, 2020, Taylor & Francis	“A digital supply chain twin for managing the disruption risks and resilience in the era of Industry 4.0	Resilience, digital twin, Supply chain	Framework, Integration, digital supply chain twin, Disruption Management
Shivangi Dhawan June 2020, Sage journals	“Online Learning: A Panacea in the Time of COVID-19 Crisis”	E-learning, Zoom classes	Social distancing, online pedagogy, flexibility, Edutex start-ups, web conferencing, webinar
Micheal Sony, Taylor & Francis, 2020	“Pros and cons of implementing Industry 4.0 for the organizations: a review and synthesis of evidence”	Pro-cons, in implementation	Implementation, of 14.0, employees, and trade union apprehensions.
Ahmad Reshad Bakhtari, Procedia, 2020	“Industry 4.0 Implementation Challenges in Manufacturing Industries: An Interpretive Structural Modelling Approach”	Cyber Physical Systems, Challenges, ISM	Interpretive Structural Modelling (ISM), Challenges, Implementation Literature review

RESEARCH METHODOLOGY

A bibliometric analysis is an established way of analyzing the publications in a particular area in a scientific way, to understand the efforts made by the academicians (Andres 2009) (Alvarado 2020). It helps to evaluate large volumes of academic data and model recognition, thereby aiding in finding a research gap and the decision-making process (Cobo et al). Bibliometric analysis on “usage of Industry 4.0” and pandemic” is not studied and there is a need to understand the problems faced by various sectors. As the COVID-19 pandemic has not fully come under control and more knowledge should be obtained from these references, bibliometric analysis is badly needed. Therefore, our study was performed timely to provide a broad understanding of COVID-19 and future research directions. Various software can be used to understand the techniques of bibliometric data analysis and trends within the field, based on their interconnections, co-author relationship, co-occurrence, and cluster analysis, making it possible to measure and visualize the progress made in the area to be investigated.

To have a deep understanding of the works done on I4.0 in the pandemic period, a Bibliometric analysis was done. It was done in a three-step process.

- The first step is to retrieve the articles based on the keywords for analysis.
- The second step is to screen the articles and review them with the help of various software.
- The third step is to understand the contribution made by the scholarly authors.

A comprehensive literature review was carried out, using the journal articles, as the source of secondary data. The literature review was conducted in the following databases: Science Direct, Ebscohost, Google Scholar, and ACM (Association of Computing Machinery Digital Library) over the 2019-2021 timeframe period. “Industry 4.0” and “pandemic” were used as keywords for analysis. English is the language chosen and 250 academic journals were identified for review.

Initially, 200 documents were selected from various databases and transferred to the Zotero research assistant. After this initial screening, 10 duplicate articles were removed. After further screening, 40 irrelevant articles were removed as they did not satisfy the study parameters. The selected data were exported in RIS format - for Vos Viewer software and TXT format for NVivo Software.

Given below is the flow diagram for the selection process of the articles:

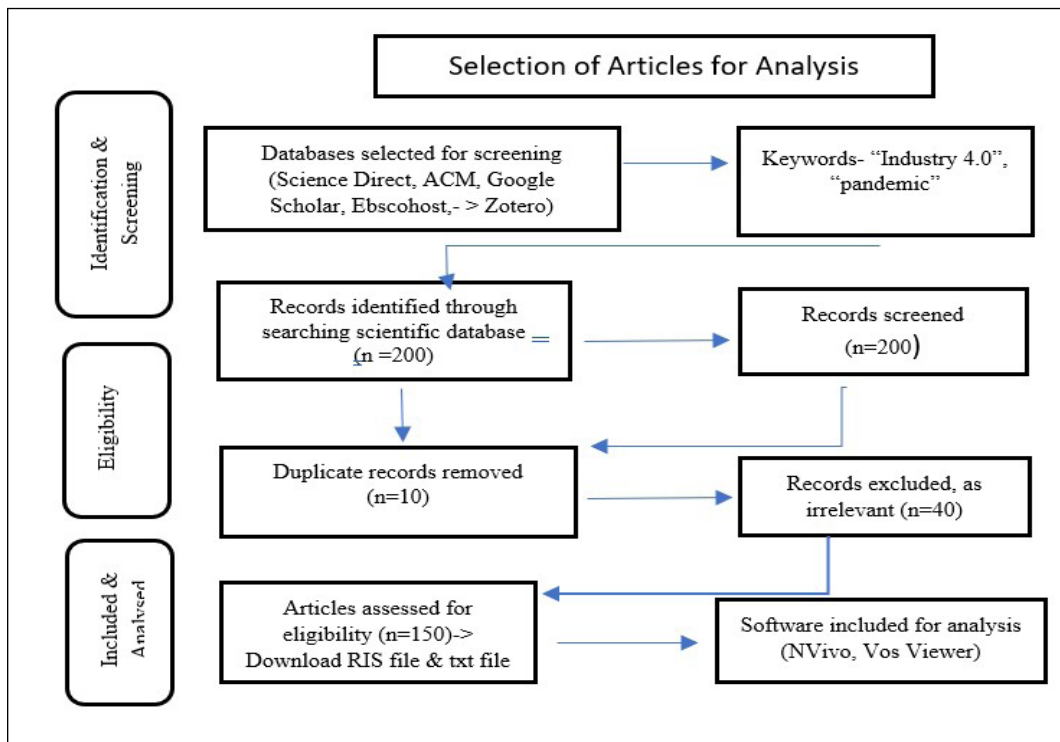


Fig. 3: Flow Diagram for Research Analysis

Bibliography for this study was done using different software like Vos viewer software to measure and explore the progress in the area to be investigated through beautiful visualizations. To analyze and visualize bibliometric networks, this study used Vos Viewer software, developed by (Van Eck and Waltman, 2010). Vos Viewer visualizes the distance between two nodes and indicates the proximity to each other (Massimiliano 2020).

RESULTS

Co-occurrence of Keywords

The co-occurrence study of keywords, shows the evolution of the research areas, through a range of software, where the collected data is converted, into a visual format (network format). This helps to find the most frequently used terms, perceptions, and links between keywords to find patterns. As per the suggestions of Hosseini, *et al.* (2018), in this study, we used “Co-occurrence of Keywords” and “Fractional Counting” analysis through Vos Viewer software. The minimum occurrences for keywords were set as 2. Out of 511 total keywords, 56 words met the threshold. Among them, the top occurring keywords were “Industry 4.0 – 45 times”, “covid-19 – 13 times”, “manufacturing processes – 8 times” etc. Shorter the distance between the two nodes, the larger the co-occurrence between the two keywords (Yuetian Yu 2020).

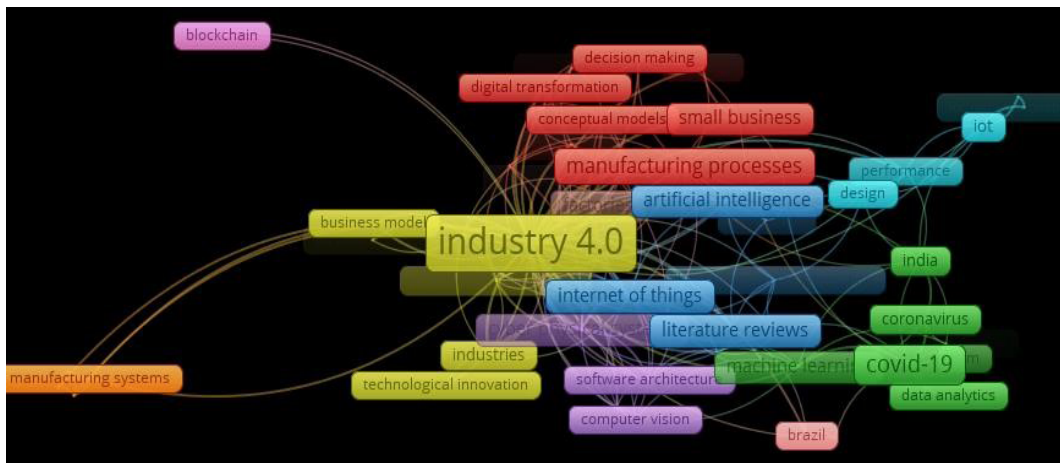


Fig. 4: Showing the Inter-relationship between the Keywords

Fig-4 shows the relationship between the keywords, through the link strength between the connecting lines. Of the 150 documents analyzed “manufacturing processes”, “internet of things”, “small businesses”, “technological innovation” shows greater correlation and indicate the flow of the literature. The total link strength of manufacturing processes is 21, cyber-physical systems are 18, Internet of things + IOT is assumed as one which comes to 21, IIOT is 10, technological innovations are 13. The top 20 keywords were selected, and displayed in table 3.

Table 3: Keyword co-occurrence Analysis

S. No	Id	keyword	occurrences	total link strength
1	19	artificial intelligence	4	4
2	66	coronavirus	3	5
3	72	covid-19	13	6
4	83	cyber physical systems	5	18
5	85	Conceptual models	3	9
6	121	digital technology	3	7
7	128	digitization	3	7
8	161	factories	4	9
9	206	India	3	7
10	210	industrial internet of things	3	10
11	216	industries	3	9
12	218	.industry 4.0	45	56
13	240	internet of things	7	19
14	246	IOT	3	3
15	272	literature reviews	6	9
16	279	machine learning	5	7
17	292	manufacturing processes	8	21
18	405	small business	4	5
19	463	technological innovations	4	13
20	450	Digital transformation	2	7

Co-AUTHOR ANALYSIS

To understand the connection between two publications, we use bibliographic coupling links. Similarly, co-authorship is used to understand the relationship links between researchers, and cooccurrence links between terms. Each link shows the strength, which is expressed as a positive numerical value. The stronger the link, the higher is the value. The strength of a relationship indicates the number of cited references the two publications have in common (in the case of bibliographic coupling links); the number of publications two researchers have co-authored (in the case of co-authorship links), or the number of publications in which two terms occur together (in the case of co-occurrence links) (Van Eck and Waltman, 2017). Co-authorship was done using the Vos Viewer software to find the number of publications two researchers have co-authored. 216 authors meet the threshold. The following fig was taking with one document as the threshold for analysis. The top 10 authors were taken in table 4.

Table 4: Showing Co-author Relationship and Link Strength

Author	documents	Total link strength
Haleem Abid	4	10
Javed Mohd	4	10
Vaish Abhishek	2	7
Vaishya Raju	2	7
Suman Rajeev	2	6
Douxoi Alexandre	3	5
Ivanov Dmitry	3	5
Queiroz Machel	2	4
Wambo Samuel mosso	2	4
Banionovic mehmedovic	2	2

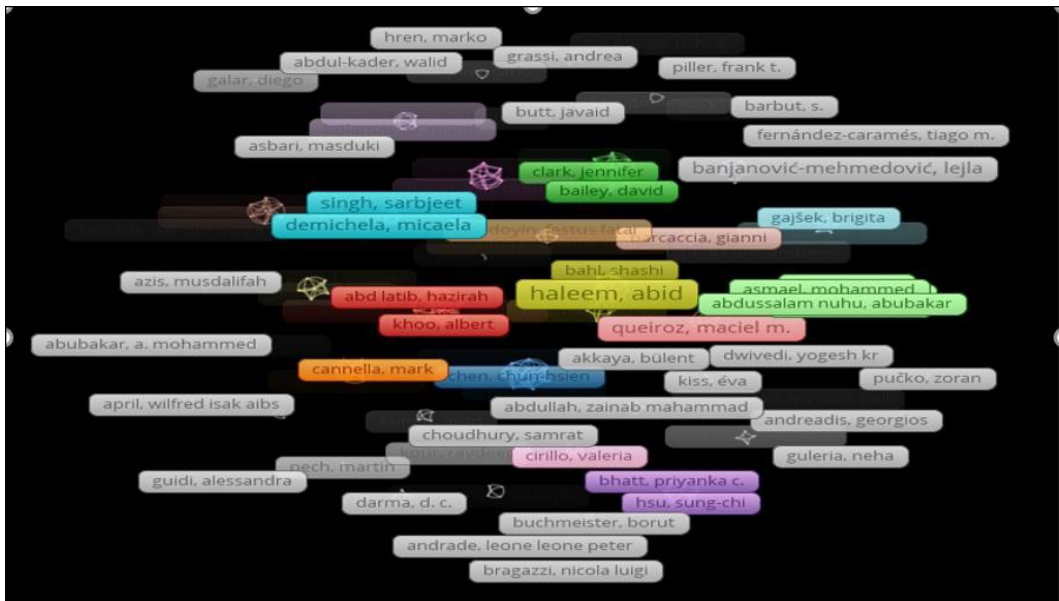


Fig. 5: Showing Links Strength of the Co-authorship

Co-authorship indicates the strength of links between researchers. The table above shows the contribution made by Haleem Abid and Javed Mohd in 4 documents with a link strength of 10 each.

WORD CLOUD

Word Cloud is a map that displays up to 100 most frequently occurring words, through NVIVO software. Qualitative data analysis software QDAS allows the researchers to analyses huge volumes of papers, articles, and other documents, (Maureen O'Neill, *et al.*, 2018), to establish links, visualize themes, and thereby finding gaps, for further research. It is a very useful tool that allows us to store and organize data by various categories such as theme, sentiment, or attributes. NVivo software allows clustering analysis, thematic reviews, network analysis, cross-tabulation of mixed methods data, visualization of word occurrence and co-occurrence, and thereby creating mind maps. It is a summary of selected nodes. Word cloud is also an attractive representation tool. A word cloud can be used to identify possible themes, frequently occurring words, and find the most frequently occurring concepts or find the research gap.

The sequence of commands are as follows:

1. Click 'Explore > Word Frequency > 'Select All'.
2. In the 'Display words' field select 1000 most frequently recurring words
3. then 'Run Query'



Fig. 6: Showing Word Cloud of the Most Occurring Words

Network analysis of the research papers infers that there are two major research areas, which could be clustered into two clusters, one cluster being industry 4.0, and the other one Covid-19. After analyzing various documents and contributions made by various authors the literature review during the pandemic period had been the usage of I4.0 applications, to counter the Covid-19 pandemic, and technological and healthcare innovations, building up of agile supply chain systems, usage of technology to improve the safety of workers.

ACCELERATED ADOPTION OF I4.0 POST-PANDEMIC

The recent outbreak has led the providers of IoT solutions to quickly provide healthcare solutions, to combat the rising demand, for high-quality services, for protection, against the Covid-19 (Nitisha 2020). From pharmaceutical firms to producers of medications and vaccine developers, the entire healthcare ecosystem has been involved in providing relief against the virus (Markets and Markets 2020). Patient monitoring remotely, Telemedicine providing, and inpatient monitoring through Cobots, have become a rage during COVID times. As companies are thinking about restoring operations and scaling up their productions, they are focusing on using more digital technologies to deal with future crises, on a priority basis. COVID-19, changed the perception of work areas, as well as working practices, in firms around the world, forcing everyone to embrace new technologies, and discover their benefits and challenges (IoT-analytics 2020).

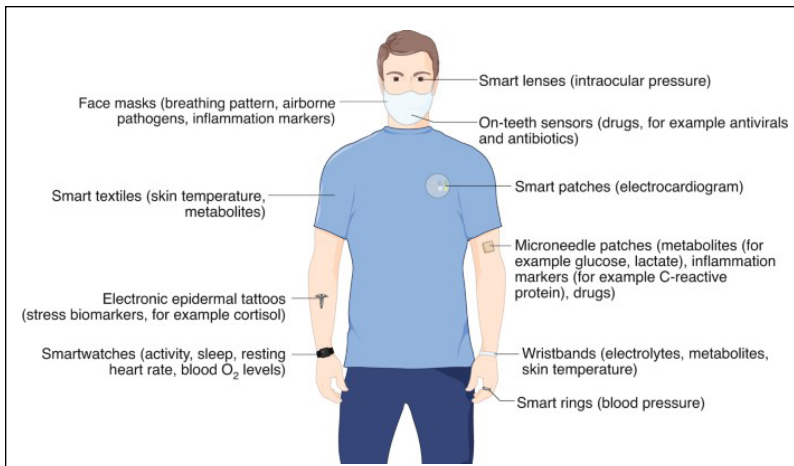


Fig. 7: Showing Smart Wearable Technologies

Wearable technology is an emerging trend in the COVID-19 times as it monitors daily activities and fits into the changing lifestyles and can be worn on any part of the body. The ability to connect to the Internet and establishment of data exchange between a network and a device (Dunn, Yetisen 2018). The use of face masks with integrated sensors is one of the most promising strategies for identifying infected individuals (Ceres Ates, 2020).



Fig. 8: Top I4.0 Technologies Adoption Report for 2020

Source: IoT Analytics

According to a recent survey conducted by McKinsey, 93 percent of manufacturing and supply chain organizations are planning to concentrate, on the resilience of their supply chains, 90 percent are planning to improvise their digital expertise (McKinsey 2020), to improve their safety standards, by frequently updating them, in lines with the technological advancements and new mandates (Markets and Markets, research report 2020), for the safeguard of their employees, machines, up-gradation of production lines, and safety systems in the organizations.

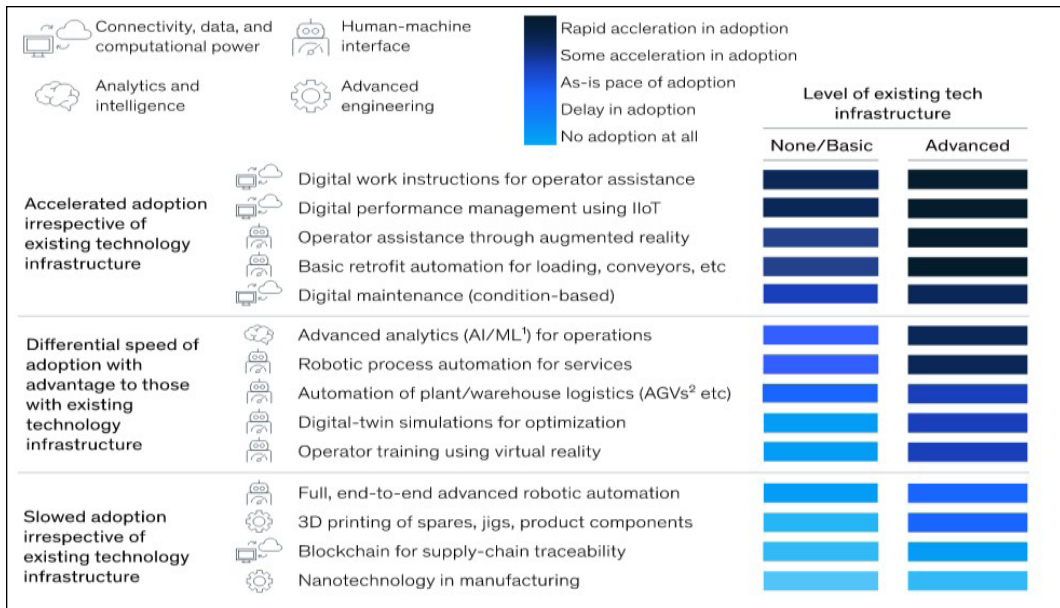


Fig 9: Rate of Adoption of I4.0 by Industries

Source: McKinsey 2020

The above figure shows various levels of the adoption rate of Industry 4.0 by companies at different levels. According to McKinsey 2020 report, there can be three levels of adoptions. Accelerated adoption is seen for companies, to react to the new needs and demands, like tracking the well-being of the workers, imposing safe distancing norms on the shop floor, and encouraging remote collaboration, that helps to attain quick-win solutions. Companies that already have the capabilities, can go for differential adoption rates to attain digital and logistics automation. Small and medium-sized enterprises (SMEs) and companies with a more difficult financial or liquidity position can postpone their implementation. For solutions that require higher capital investment and have unpredictable or long-term payback periods, can opt for Deferred adoption, like the adoption of Blockchain technologies, most advanced automation. According to the Markets and Markets report 2020, the price of industrial safety components, installation charges, and maintenance and repair costs are putting a major burden on the organizational budget of companies.

There has been a marked rise in innovations in areas like:

1. Improved work-from-home infrastructure, like laptops, improved band-width, internet connectivity, etc.)
2. Mobile devices
3. Team collaboration tools that can bring people closer like, video conferencing, team chat, project planning, etc (IoT analytics 2020).

4. Investments in infrastructure for virtualization, like the ability to run multiple operating systems and apps on a single machine or server (e.g., remote desktops)
5. Desktop support
6. Security
7. VPN networking

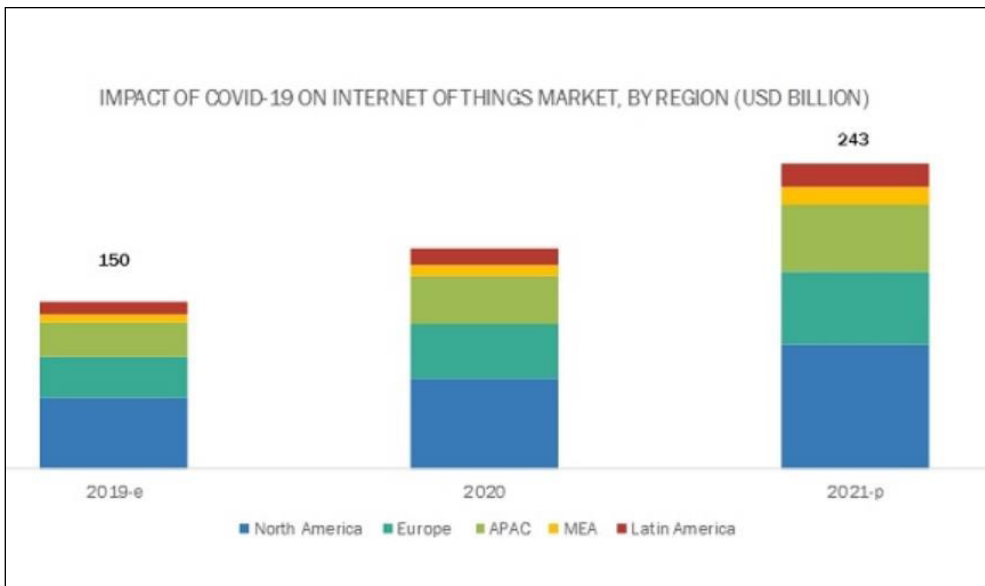


Fig 10: Impact of the IoT Markets Region Wise

Source: Markets and Markets

According to the report of Markets and Markets 2020, the Compound Annual Growth Rate (CAGR), of Internet of Things (IoT) global markets is going to rise by 13.7 percent, from USD 150 billion in 2019 to USD 243 billion by 2021. Drivers for their growth emphasize, increasing acceptance of smart payment technologies, to lessen the human interaction involved in cash payments, and rising demand for work from home and wearable devices like fitness watches, wearable scanners, body sensors, smartwatches, Google glasses, GPS shoes for a few. Global Wearable Devices Market is expected to rise from its initial estimated value of USD 24.53 billion in 2018 to an estimated value of USD 88.53 billion by 2026, registering a CAGR of 17.4% in the forecast period of 2019-2026 (Data Bridge Market report 2020).

Amid the COVID-19 outbreak, the growing demand for IoT in the major Asia Pacific (APAC) nations, such as China, India, and Australia, is projected to increase. Most of the economies, such as China, India, Japan, and Australia have been slowed down, due to the COVID-19 outbreak. But the demand for IoT in areas such as healthcare and other utilities, in countries such as China and India, will continue to keep up.

CONCLUSION

The role of Industry 4.0 in the tackling of the pandemic has been widely discussed. It helped to ensure that, more businesses survived and returned to normal businesses as quickly as possible, thereby providing a platform to develop more resilient businesses in the medium and long term. More and more research articles papers have been written to share valuable academic knowledge, helping to find ways to control its transmission. The manufacturing sector will be focusing on distributed productions, intelligent supply chains, and hyper customization with responsible Artificial Intelligence algorithms, focusing on better technological solutions, to save the environment, and to increase sustainability (Vineusa, 2020). This new paradigm holds a tremendous opportunity for organizations thereby leading to the transformation of the industry. This will revolutionize the way we perform in the manufacturing sector, create new business models and markets, gear up the economy, create a conducive work atmosphere, and enhance and upgrade the working skills.

REFERENCES

- [1] Agostini, L., & Nosella, A. (2019). The adoption of Industry 4.0 technologies in SMEs: results of an international study. *Management Decision*.
- [2] Akyar, I. (2012). Standard operating procedures (what are they good for?). *Latest Research into Quality Control*, 367-391. Google Scholar Crossref
- [3] Alabi, M.O. (2020). Big Data, 3D Printing Technology, and Industry of the Future. In *Additive Manufacturing: Breakthroughs in Research and Practice* (pp. 503-520). IGI Global. Google Scholar
- [4] Andrés, A. (2009). Measuring academic research: How to undertake a bibliometric study. Elsevier. Google Scholar
- [5] Aslam, Farhan., Aimin, W., Li, M., & Ur Rehman, K. (2020). Innovation in the era of IoT and industry 5.0: absolute innovation management (AIM) framework. *Information*, 11(2), 124.
- [6] Bakhtari, A.R., Kumar, V., Waris, M.M., Sanin, C., & Szczerbicki, E. (2020). Industry 4.0 Implementation Challenges in Manufacturing Industries: An Interpretive Structural Modelling Approach. *Procedia Computer Science*, 176, 2384-2393. Google Scholar
- [7] Benešová, A., & Tupa, J. (2017). Requirements for education and qualification of people in Industry 4.0. *Procedia Manufacturing*, 11, 2195-2202. Google Scholar
- [8] Borregan-Alvarado, J., Alvarez-Meaza, I., Cilleruelo-Carrasco, E., & Garechana-Anacabe, G. (2020). A Bibliometric Analysis in Industry 4.0 and Advanced Manufacturing: What about the Sustainable Supply Chain? *Sustainability*, 12(19), 7840. Google Scholar Crossref
- [9] Cobo, M. J., López-Herrera, A. G., Herrera-Viedma, E., & Herrera, F. (2012). SciMAT: A new science mapping analysis software tool. *Journal of the American Society for Information Science and Technology*, 63(8), 1609–1630. Google Scholar
- [10] Curran, R., Bil, C., Borsato, M., Chou, S. Y., Ghodous, P., Hiekata, K., ... & Xu, W. (2017, July). Advances in Transdisciplinary Engineering. In *International Conference on Transdisciplinary Engineering*. Google Scholar
- [11] Czifra, G., & Molnár, Z. (2020). *Covid-19 and Industry 4.0*. Research Papers Faculty of Materials Science and Technology the Slovak University of Technology, 28(46), 36-45. Google Scholar

- [12] Dhawan, Shivangi. (2020). Online learning: A panacea in the time of the COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5–22.
- [13] Dunn, J., Runge, R., & Snyder, M. (2018). Wearables and the medical revolution. *Personalized Medicine*, 15(5), 429-448. Google Scholar
- [14] Flynn, J., Dance, S., & Schaefer, D. (2017). Industry 4.0 and its Potential Impact on Employment Demographics in the UK. *Advances in Transdisciplinary Engineering*, 6, 239-44. Google Scholar
- [15] Foidl, H., & Felderer, M. (2015, November). Research challenges of industry 4.0 for quality management. *International Conference on Enterprise Resource Planning Systems* (pp. 121–137). Springer, Cham. Google Scholar
- [16] Ghobakhloo, M. (2018). The future of the manufacturing industry: a strategic roadmap toward Industry 4.0. *Journal of Manufacturing Technology Management*. Google Scholar
- [17] Gilchrist, A. (2016). Industry 4.0: the industrial internet of things. Apress. Google Scholar 18. <https://www.mckinsey.com/business-functions/operations/our-insights/industry-40reimagining-manufacturing-operations-after-covid-19#>
- [18] <https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/the-age-of-analytics-competing-in-a-data-driven-world>
- [19] Hosseini, M. R., Maghrebi, M., Akbarnezhad, A., Martek, I., & Arashpour, M. (2018). Analysis of citation networks in building information modeling research. *Journal of Construction Engineering and Management*, 144(8), 04018064. Google Scholar
- [20] Nitisha Dubey 2020, <https://www.bisinfotech.com/covid-19-impact-on-the-internet-ofthings-iiot-market/>
- [21] <https://www.bosch.com/products-and-services/connected-products-and-services/industry4-0/>
- [22] <https://iiot-analytics.com/the-impact-of-covid-19-on-the-internet-of-things-part-2/>
- [23] https://www2.deloitte.com/content/dam/Deloitte/in/Documents/technology-mediatelecommunications/in-tmt-IoT_Theriseoftheconnectedworld-28aug-noexp.pdf
- [24] <https://www.databridgemarketresearch.com/reports/global-wearable-devicesmarket#:~:text=Global%20Wearable%20Devices%20Market%20is,forecast%20period%20of%202019%2D2026>
- [25] <https://www.marketsandmarkets.com/Market-Reports/iiot-manufacturing-market-129197408.html>
- [26] H. Kagermann, Wahlster, and J. Helbig, “Recommendations for Implementing the Strategic Initiative *INDUSTRIE 4.0*,” München, 2013
- [27] Javaid, M., Haleem, A., Vaishya, R., Bahl, S., Suman, R., & Vaish, A. (2020). Industry 4.0 technologies and their applications in fighting COVID-19 pandemic. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(4), 419-422. Google Scholar
- [28] Ilmi, Z., Darma, D. C., & Azis, M. (2020). Independence in Learning, Education Management, and Industry 4.0: Habitat Indonesia during COVID-19. *Journal of Anthropology of Sport and Physical Education*, 4(4), 63–66. Google Scholar Crossref
- [29] Ivanov, D., & Dolgui, A. (2020). A digital supply chain twin for managing the disruption risks and resilience in the era of Industry 4.0. *Production Planning & Control*, 1-14. Google Scholar
- [30] Jia, Q., Guo, Y., Wang, G., & Barnes, S. J. (2020). Big data analytics in the fight against major public health incidents (Including COVID-19): a conceptual framework. *International Journal of Environmental Research and Public Health*, 17(17), 6161. Google Scholar

- [31] Karadayi-Usta, S. (2019). An interpretive structural analysis for industry 4.0 adoption challenges. *IEEE Transactions on Engineering Management*, 67(3), 973-978. Google Scholar Crossref
- [32] Kiel, D., Müller, J. M., Arnold, C., & Voigt, K. I. (2017). Sustainable industrial value creation: Benefits and challenges of industry 4.0. *International Journal of Innovation Management*, 21(08), 1740015. Google Scholar
- [33] Leung, T. K. (2012). The application of breast MRI on Asian women (dense breast pattern). Imaging of the breast: Technical aspects and clinical implications. Rijeka, Croatia: *InTech*, 23e60. Google Scholar
- [34] Madsen, D. Ø. (2019). The emergence and rise of Industry 4.0 viewed through the lens of management fashion theory. *Administrative Sciences*, 9(3), 71. Google Scholar
- [35] Manero, A., Smith, P., Koontz, A., Dombrowski, M., Sparkman, J., Courbin, D., & Chi, A. (2020). Leveraging 3D printing capacity in times of crisis: recommendations for COVID-19 distributed manufacturing for medical equipment rapid response. *International Journal of Environmental Research and Public Health*, 17(13), 4634. Google Scholar
- [36] Maresova, P., Soukal, I., Svobodova, L., Hedvicakova, M., Javanmardi, E., Selamat, A., & Krejcar, O. (2018). Consequences of industry 4.0 in business and economics. *Economies*, 6(3), 46. Google Scholar
- [37] Massimiliano Versace 2020, <https://medium.com/towards-artificial-intelligence/turn-the-light-back-on-31536faafcfd>
- [38] Mubarak, M.F., & Petraite, M. (2020). Industry 4.0 technologies, digital trust, and technological orientation: What matters in open innovation? *Technological Forecasting and Social Change*, 161, 120332.
- [39] Mueller, T., Elkaseer, A., Charles, A., Fauth, J., Rabsch, D., Scholz, A., ... & Scholz, S. G. (2020). Eight weeks later—the unprecedented rise of 3D printing during the COVID-19 pandemic—a case study, lessons learned, and implications on the future of global decentralized manufacturing. *Applied Sciences*, 10(12), 4135. Google Scholar
- [40] Nathan Eddy 2021, <https://www.healthcareitnews.com/news/remote-patient-monitoringgain-big-momentum-2020>
- [41] O'Dowd, K., Nair, K.M., Forouzandeh, P., Mathew, S., Grant, J., Moran, R., ... & Pillai, S. C. (2020). Face masks and respirators in the fight against the COVID-19 pandemic: a review of current materials, advances, and future perspectives. *Materials*, 13(15), 3363. Google Scholar
- [42] Oettmeier, K., & Hofmann, E. (2017). Additive manufacturing technology adoption: an empirical analysis of general and supply chain-related determinants. *Journal of Business Economics*, 87(1), 97-124. Google Scholar
- [43] Omar, Y.M., Minoufekr, M., & Plapper, P. (2019). Business analytics in manufacturing: Current trends, challenges, and pathway to market leadership. *Operations Research Perspectives*, 6, 100127. Google Scholar
- [44] O'Neill, M.M., Booth, S. R., & Lamb, J. T. (2018). Using NVivo™ for literature reviews: The eight-step pedagogy (N7+ 1). *Qualitative Report: an online journal dedicated to qualitative research since 1990*, 21-39.
- [45] Pellegrini, M.M., Ciampi, F., Marzi, G., & Orlando, B. (2020). The relationship between knowledge management and leadership: mapping the field and providing future research avenues. *Journal of Knowledge Management*. Google Scholar

- [46] Penprase, B.E. (2018). The fourth industrial revolution and higher education. *Higher Education in the Era of the Fourth Industrial Revolution*, 207. Google Scholar
- [47] Pfeiffer, S. (2017). The vision of “Industrie 4.0” in the making—a case of future told, tamed, and traded. *Nanoethics*, 11(1), 107–121. Google Scholar
- [48] Pereira, A. C., & Romero, F. (2017). A review of the meanings and the implications of the Industry 4.0 concept. *Procedia Manufacturing*, 13, 1206–1214.
- [49] Reuter, C., & Hausberg, C. (2014). Industry 4.0 in management: IT-supported configuration of global production networks. *ZWF magazine for economical factory operation*, 109 (12), 960–963. Google Scholar
- [50] Satoglu, S., Ustundag, A., Cevikcan, E., & Durmusoglu, M.B. (2018). Lean transformation integrated with Industry 4.0 implementation methodology. In *Industrial Engineering in the Industry 4.0 Era* (pp. 97–107). Springer, Cham. Google Scholar
- [51] Sony, Micheal. (2020). Pros and cons of implementing Industry 4.0 for the organizations: a review and synthesis of evidence. *Production & Manufacturing Research*, 8(1), 244–272. Google Scholar
- [52] Tiwari, S. (2020). Supply chain integration and Industry 4.0: a systematic literature review. *Benchmarking: An International Journal*. Google Scholar
- [53] Van Eck, N.J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. Google Scholar
- [54] Wagner, T., Herrmann, C., & Thiede, S. (2017). Industry 4.0 impacts on lean production systems. *Procedia Corp*, 63, 125–131. Google Scholar
- [55] Wang, S., Wan, J., Li, D., & Zhang, C. (2016). Implementing smart factory of Industrie 4.0: an outlook. *International Journal of Distributed Sensor Networks*, 12(1), 3159805.
- [56] Yetisen, A.K., Moreddu, R., Seifi, S., Jiang, N., Vega, K., Dong, X., ... & Koch, A. W. (2019). Dermal tattoo biosensors for colorimetric metabolite detection. *Angewandte Chemie*, 131(31), 10616–10623. Google Scholar
- [57] Yu, Y., Li, Y., Zhang, Z., Gu, Z., Zhong, H., Zha, Q., ... & Chen, E. (2020). A bibliometric analysis using VOS viewer of publications on COVID-19. *Annals of Translational Medicine*, 8(13). Google Scholar
- [58] Zheng, P., Sang, Z., Zhong, R.Y., Liu, Y., Liu, C., Mubarak, K., & Xu, X. (2018). Smart manufacturing systems for Industry 4.0: Conceptual framework, scenarios, and future perspectives. *Frontiers of Mechanical Engineering*, 13(2), 137–150. Google Scholar

Awareness of Salaried Employees towards Investment Portfolios

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Abstract:

The paper documents the level of awareness of salaried employees in investment portfolios. Portfolio Investment is a collection of financial assets that include equities, bonds, mutual funds, exchange-traded funds (ETFs), certificates of deposits, foreign exchange which is expected to generate returns based on the market volatility. Investment Portfolios can provide additional income in a short span of time to salaried employees. Objective of the study is to understand the awareness and their approach towards various investment portfolios. Analysis of the study track down the reasons for investing in a particular portfolio and understand their viewpoint towards other investment sources and to test the level of knowledge of salaried employees in the field of investment portfolios. The study helps to understand the retail investor sentiments towards investment as a concept and highlight the level of importance a salaried employee gives to investments.

Keywords: Investment Decision, Awareness on Investment Portfolios, Employees' Investment Options

INTRODUCTION

In today's world, financial literacy plays a very important role in every individual's lives. In order to cope with rising prices in the economy individuals are required to have some additional investments which will provide them with extra earnings other than their salary. It has been found that majority people have basic financial knowledge but are unaware of basic differences between stocks and bonds (Maarten van Rooij, Annamaria Lusardi, Rob Alessie, *Financial Literacy and Stock Market Participation*, 2010). According to one article in YourStory, as per global survey 76% of the adult Indian population are unaware of basic financial knowledge. We will try to address the issue of financial awareness among the salaried employees and use various analytical tools in order to understand their mindset, knowledge, attitude, etc. Is there a relationship between financial literacy and investments in various financial portfolios? Financial awareness helps the salaried employees to grow their income which in turn will improve their

overall financial position in the society. In this research we will use various qualitative as well as quantitative techniques to understand the investment portfolio knowledge of the salaried employees in Electronic City, Bangalore. The paper will also document the various factors affecting the investment behaviors of the salaried employees.

REVIEW OF LITERATURE

Investment Portfolios are a group of income-producing assets which are bought by the investors to meet a particular financial goal. Portfolio Theory was first sighted in a book ‘The Theory of Investment Value’ by John Burr Williams in the 1930s where he developed the dividend discount model. In earlier days, investors were to target the best stock and buy it at the best price possible.

Investors in those days were laying bets on stocks that have best prices. They were not focusing on the risk factor associated with portfolio investments. Harry Markowitz introduced the Modern Portfolio Theory in his article ‘Portfolio Selection’ in March 1952, *Journal of Finance*. The article by Markowitz stated two mathematical axioms: “nothing ventured, nothing gained” and “all your eggs in one basket”. Investment Portfolios in India consists of bonds, stocks, and foreign exchange, commodities and cash and cash equivalents. In India financial inclusion is very less compared to other countries in the world. According to various surveys, it has been found that people lack the basic knowledge of finance. They think that finance is only about accounting and taxation. In a Standard & Poor’s Ratings Services Global Financial Literacy Survey, they focused only on four topics which are risk diversification, inflation, numeracy, and interest compounding and the major findings were that 1 out of 3 adults worldwide responded to three topics from the four topics. In 2012 a Global Financial Literacy Survey conducted by VISA states that only 35% of the Indians are financially literate. Financial Literacy will bring proper financial planning which will enable people to have a prosperous future. In India, the condition of financial literacy does not show a favorable scenario. According to a survey in 2015, financial literacy in India is very low (24%) compared to BRICS (28%) and European Nations (52%). People do not have the habit of saving; it has been found that 31% of the people disagree towards saving. According to the *Economic and Political Weekly*, there is 60% percentage point’s variation between Indian states because of differences in gender, qualification, location (rural, urban, and metro), and employment, technology savvy and current debt. It has been observed that the country with high financial literacy also has a high GDP per capita. Some findings also show the relation between literacy and socioeconomic variables like males have better financial knowledge and it increases with education level and aggressiveness of the investor. Financial literacy is an important determinant while making investment decisions. It is the ability to understand and appropriately apply financial management skills thereby taking calculated risks and maximizing profits.

In case of stock market participation, it has been found that lack of financial knowledge reduces the investments by households in stocks (Guiso and Jappeli, 2005). There must be proper understanding of economics and finance among households for stock ownership (Rooij, Lusardi *et al.* 2011). Stock market participation and financial literacy also depends on the age of a person. Young people tend to have low financial literacy compared to middle-aged people (particularly 40 to 60) and the literacy rate declines at an advanced age (61 or older). One of the research findings came up with the fact that salaried investors prefer investing in bank deposits, real estate and gold because of its safety factors (Patil and Nandwar, 2014). Financial decision-making of salaried employees is severely affected by the level of literacy they have regarding the overall financial markets. In case of Indian salaried employees, the financial literacy is influenced by various factors such as gender, education and income. There are many other factors as well which affect the financial awareness of working young in urban areas like joint-family and consultative decision making also significantly affect financial literacy. It has been found that there exists a positive correlation between financial knowledge and financial behaviour (Agarwalla, Barua *et al.* 2013).

There have been many arguments on the subject that the less informed investors had to incur more loss during the Global Financial Crisis of 2007-2008. So, it has been found that financially literate people make better financial decisions compared to less literate people (Guiso and Viviano, 2014). Personal financial management courses might help to improve the financial literacy rate among people. It has been found that adults with personal financial management courses in high school are not able to utilize the knowledge in an effective manner.

Risk taking ability is also one of the important factors to be considered while making investing decisions. In finance risk means the deviation of an actual return on investment from the expected return on that same investment. Risk involves the probability of losing some or all of an original investment. Risk education and risk understanding are the important aspects that an investor must consider before investing into any portfolio (Sachse, Jungermann *et al.* 2011). Risk appetite is influenced by several factors such as confidence and character, past experience, income, etc. It has been found that self-employed people have high risk tolerance and tend to invest in high-risk financial investment sources when compared with salaried employees (Shtudiner, 2018). Financial knowledge, objective knowledge, subjective knowledge and risk-taking ability are highly correlated. And in this case gender is a very important factor to be considered. As per studies it has been found male investors have higher subjective knowledge and objective knowledge which tends to increase in risk taking capacity in them compared to females.

In the context of Italian households, they found that demographic variables such as education, wealth, and income and birth cohort have a positive impact on awareness thus increasing the probability of holding stocks, relationship with banks, potency

of social interactions and also an increase in the newspaper readership in the areas where investors live. They also found that lack of awareness is a reason for limited participation in financial markets and if all investors were aware of risky assets, stock market participation would increase substantially. But they also talk about other barriers which impede people's participation in financial markets even if they are aware.

Demographic variables such as education, wealth, and income and birth cohort have a positive impact on awareness thus increasing the probability of holding stocks, relationship with banks, potency of social interactions and also an increase in the newspaper readership in the areas where investors live. Sometimes, the investor's investment decisions are influenced by various psychological biases such as overconfidence bias, economic expectations, prospect theory, etc. This psychological bias has given quite a popular field of research called behavioural finance.

As per Guiso & Jappeli, (2005); Social learning is a good medium to disseminate information to potential investors. Through social interactions the potential investors become aware of various information regarding different financial assets. The distributors of financial assets use social learning channels to spread information to potential investors who are likely to buy an asset, mainly because such a medium of information spreading lowers the cost of information dissemination.

Investment decisions depend on various factors which are being studied by many researchers. Investor behavior is one of them which has a wide range of theories like Regret Theory (Pareto, 1997), Theory of Mental Accounting (Thaler, 2001), Loss-Aversion Theory (Kahneman and Tversky, 1979), etc. Hong, Kubik & Stein, 2004; hypothesized there is an increase in stock market participation with an increase in social interaction among people. It has been stated that there are two ways through which social interaction occurs in the market – word-of-mouth helps in transfer of information among the people in the market and the other way is the enjoyment that people get by discussing the market trends.

Word-of-mouth helps the investors understand what is happening in the market and act according to the market situation. However, under the delight of talking about the market, there is an externality, with any individuals' decision to leave the market making it more likely that others in the peer group will leave too. In finance investors tend to rely on the phenomenon called herd instinct, which means they follow the instincts of other investors instead of assessing their own analysis. This means investors try to buy and sell investments based on the investment decisions or strategies adopted by other investors. Investors must be aware of the actions taken by other investors in order to replicate the investment decisions. When an investment is made without the knowledge of other investors' decisions and then that individual withdraws from such investment after figuring out that other investors have decided not to invest in it then such behavior can be depicted as herd mentality. In the case of herd mentality, the reverse is also possible which means an investor might start investment after knowing that other investors have started investing in a particular asset class. (Bikhchandani and

Sharma 2000). In most of the research it has been found that the salaried employees have the basic level of financial knowledge but they still invest in bank savings accounts and fixed deposits because of safety issues. It indicates that they have less risk appetite towards investment portfolios.

GAPS IN LITERATURE

This study focuses on the financial literacy/awareness of salaried employees towards investment portfolios. Various studies done in the past have focused mainly on the developed economies but no substantial research has been conducted in emerging economies such as India, this study focuses on the salaried people in the context of Bangalore thus attempting to fill the contextual gap. There are several other barriers such as income, risk ability, ignorance which also have an impact on the investment decisions of the people, this has not been substantially accounted for in previous studies. In most of the previous research, the focus has been towards the financial literacy of the general public. The researchers have not focused on the knowledge of specific investment portfolios that the people are aware of. The papers have documented the level of literacy in finance and the reasons behind their low degree of willingness towards investment. And also, the papers have not gone into details regarding the effect of the income.

CONCEPTUAL FRAMEWORK

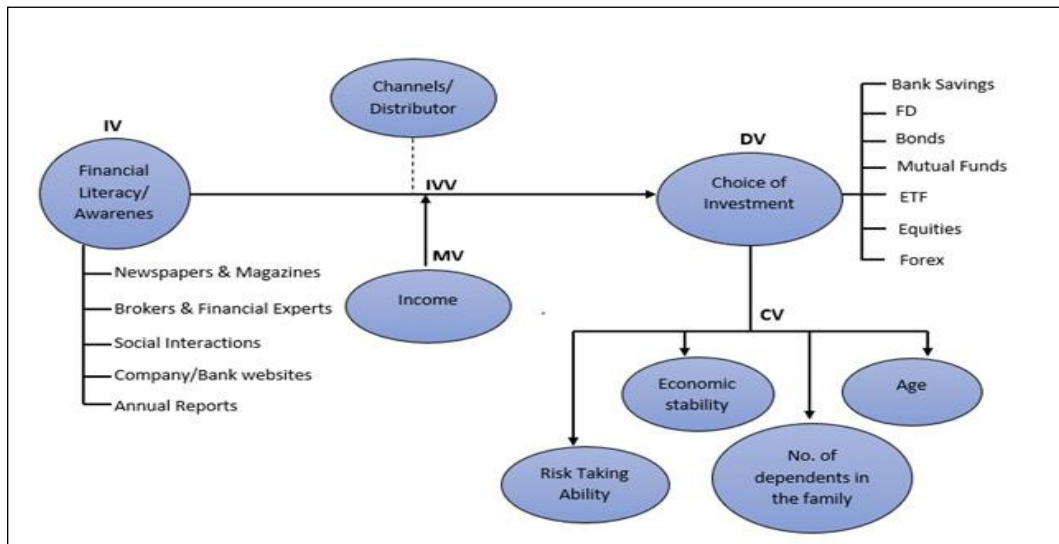


Fig. 1

HYPOTHESES

Ha: Financial literacy affects investment decisions.

Ha: Income of salaried employees affects investment decisions.

RESEARCH OBJECTIVE

The objective of this research paper is to study the level of awareness of salaried employees towards investment portfolios in the context of Bangalore. We would also like to study the approach of salaried people towards investment portfolios i.e., if they invest in certain portfolios, why do they do so and also what is their viewpoint towards different investment sources.

RESEARCH QUESTION

Does financial literacy affect salaried employees for taking decisions on investing and what are the factors that cause them to take this decision?

SCOPE OF STUDY

The paper will document the relationship between the financial literacy and the decision-making attitude of salaried employees. It will capture the extent to which an employee's decision to invest depends on their financial literacy. In order to understand this correlation, we are going to make a survey by selecting sample size as 50. The survey will be conducted for the population of Bangalore City. The sample survey will help us determine the relation between financial literacy and decision-making ability of the salaried employees. While conducting the research we are going to take income, channels of investment and risk-profile of the employees as the variable factors which will determine their investment decision-making behaviour.

DATA SPECIFICS

In this research we are going to gather data of salaried employees to understand their awareness level and literacy rate of investment portfolios. In order to understand the relationship, we will collect information regarding their income, age, education, their investment avenues, risk-taking ability and number of dependents. To find this data, we are going to prepare a set of questions which will capture all the information required for this research. We are targeting the city of Bangalore in order to carry out our research. For data collection, we are going to apply a communication approach and question the subjects and record their response for further analysis.

SAMPLING METHOD

In order to understand the relation between investments of salaried employees and financial literacy we need to take a sample size to understand the population. For this research we will take a sample size of 50 salaried employees. We are targeting the salaried employees because they possess the right information which is required for our research. Our sample frame consists of employees in Bangalore. Since it's a probability sampling technique each employee has an equal opportunity to get selected in the sample size.

VARIABLES AND MEASURES

Our group will take into consideration age, income, and risk-taking ability, number of dependents, knowledge of investment channels, basic financial knowledge and awareness about financial markets. We will collect these data with the help of a questionnaire in order to capture all this information. The information that we seek will be mostly categorical data. The set of questions will be qualitative in nature which will help us arrive at our alternate hypothesis in a very accurate manner. We are going to prepare an unstructured questionnaire which will help us capture qualitative data and help us arrive at our results in an effective manner. The questionnaire is formed in interval and ordinal scale which will help us measure the variables quantitatively.

METHOD OF ANALYSIS

To understand the relation, we will use a regression model and observe the anova table in order to identify the R Square value. The regression line also will help us arrive at our conclusion of the hypothesis formulated by us. In this analysis, multiple regression models are to be applied in order to understand the accuracy, sensitivity and specificity of the outcome after generating the regression model. As the data result is categorical in nature and ratio and interval scale has been used multiple regression methods of analysis will provide us with the appropriate results for our alternate hypothesis. The model will help us predict the impact of financial literacy towards investment portfolios.

DATA INTERPRETATION AND FINDINGS

Debt Instruments

Multiple R-squared	Adjusted R-squared	p-value	Standard Error
40.06%	38.84%	6.246e-07	0.1066

Equation: $y = (0.6102) x + 1.1781$

The R output indicates that Newspaper and magazines have a significant impact on the financial literacy of salaried employees because p-value is less than 5%. The multiple R-squared is in the range of 20% to 90% from which we can infer that the model is a good model for prediction. The model can predict 40.06% variability from the mean of the dependent variable which is financial literacy in this case. The Adjusted R-squared remained quite similar after reducing independent variables.

Equities

Multiple R-squared	Adjusted R-squared	p-value	Standard Error
44.05%	42.91%	1.105e-07	0.09808

Equation: $y = (0.60922) x + 1.16131$

The R output indicates that Newspaper and magazines have a significant impact on the financial literacy of salaried employees because p-value is less than 5%. The multiple R-squared is in the range of 20% to 90% from which we can infer that the model is a good model for prediction. The model can predict 44.05% variability from the mean of the dependent variable which is financial literacy in this case. The Adjusted R-squared remained quite similar after reducing independent variables.

Mutual Funds

Multiple R-squared	Adjusted R-squared	p-value	Standard Error
13.73%	11.97%	0.007442	0.1204

Equation: $y = (0.3363) x + 2.1351$

The R output indicates that Newspaper and magazines have a significant impact on the financial literacy of salaried employees because p-value is less than 5%. The multiple R-squared is not in the range of 20% to 90% from which we can infer that the model cannot be used for prediction. The model can predict only 13.73% variability from the mean of the dependent variable which is financial literacy in this case. The Adjusted R-squared remained quite similar after reducing independent variables.

Exchange Traded Funds (ETFs)

Multiple R-squared	Adjusted R-squared	p-value	Standard Error
35.08%	32.37%	3.145e-05	Annual Reports: 0.1361 Newspapers, Magazines: 0.1106

Equation: $y = (0.3876) x_1 + (0.4125) x_2 + 0.1366$

The R output indicates that Newspaper and magazines have a significant impact on the financial literacy of salaried employees because p-value is less than 5%. The multiple R-squared is in the range of 20% to 90% from which we can infer that the model is a good model for prediction. The model can predict 35.08% variability from the mean of the dependent variable which is financial literacy in this case. The Adjusted R-squared remained quite similar after reducing independent variables.

Forex

Multiple Rsquared	Adjusted Rsquared	p-value	Standard Error
38.74%	36.19%	7.804e-06	Annual Reports: 0.10459 Newspaper & magazines: 0.0849

Equation: $y = (0.30671) x_1 + (0.36326) x_2 + 0.20830$

The R output indicates that Newspaper & magazines and Annual Reports have a significant impact on the financial literacy of salaried employees because p-value is less than 5%. The multiple Rsquared is in the range of 20% to 90% from which we can

infer that the model is a good model for prediction. The model can predict 38.74% variability from the mean of the dependent variable which is financial literacy in this case. The Adjusted R-squared remained quite similar after reducing independent variables.

FINDINGS

From the above regression analysis, we can infer that newspaper & magazines and annual reports impact most of the financial decisions of the salaried employees. Most of the models have adjusted R-squared in the range of 20% to 90% except for the model depicting the impact on mutual fund investments, which is below 20% indicating a poor model. Therefore, a lot of financial knowledge is gathered by the salaried employees from newspaper & magazines and annual reports. It can also be said that the salaried employees rely a lot on these sources of financial information in order to make investment decisions.

IMPLICATIONS

This study recommends the following suggestions which will help in improving the financial literacy among salaried employees:

1. As per our analysis, we understood that most of the salaried employees rely on newspaper and magazines and annual reports for making financial decisions. Thus, it is advisable to those salaried employees to also look out for other sources of information such as company websites, social interaction, brokers report, etc. These sources will also provide them sound information about various asset classes and they will be more informed about their investment decisions.
2. Employers should promote financial education through various programs such as seminars, workshops among the employees in order to help them understand the basics of financial responsibility.
3. Education about Personal finance can be imparted to the employees through TV programs, community workshops and seminars. Financial institutions must leverage the popular media channels such as TV and Internet.
4. The basic financial education should be introduced into the core-curriculum at various levels in the education system to improve the level of financial literacy among students which would form the working class in the future.

CONCLUSION

Financial awareness among salaried employees is restricted to sources such as newspapers and magazines mostly and in some cases annual reports. Thus, there is a need to increase the awareness regarding various financial instruments which can prove to be beneficial for the salaried people in planning their future. Also, the Indian education system needs to be developed in a way that knowledge about managing personal finances is inculcated among individuals from the very beginning.

REFERENCES

- [1] Luigi Guiso and Tullio Jappelli. (2005). Awareness and Stock Market Participation, Review of Finance.
- [2] Marteen van Rooij, Annamaria Lusardi, Rob Alessie. (2011). Financial Literacy and stock market participation, Journal of Financial Economics.
- [3] Sonali Patil and Dr. Kalpana Nandwar. (2014). A Study on Preferred Investment Avenues among Salaried People With Reference To Pune, India, Journal of Economics and Finance.
- [4] Luigi Guiso, Eliana Viviano. (2014). How much can Financial Literacy Help?, Review of Finance.
- [5] Ze'ev Shtudiner. (2018). Risk Tolerance, Time Preference and Financial Decision Making: Differences between Self-employed People and Employees, Ariel University, Department of Economics.
- [6] Harrison Hong, Jeffrey D. Kubik, Jeremy C. Stein. (2005). Social Interaction and Stock-Market Participation, The Journal of Finance.
- [7] Sushil Bikhchandani, Sunil Sharma. (2000). Herd Behavior in Financial Markets: A Review, IMF Working Paper.
- [8] Sobhesh Kumar Agarwalla, *et al.* (2013). Financial Literacy among Working Youth in Urban India, Indian Institute of Management Ahmedabad.
- [9] Katharina Sachse, *et al.* (2012). Investment Risk - The perspective of Individual Investors, Journal of Economic Psychology.
- [10] Standard and Poor's Global Financial Literacy Survey, 2019.
- [11] Michael F. Dallas, Value and Risk Management: A Guide to Best Practice.

A Study of Customer Behavior Regarding Online Banking Services in Hamirpur, Himachal Pradesh

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Abstract: Online banking changes the scenario of the banking sector, it provides convenient banking to the customers as well as to the bankers. It permits to do the financial transactions over the internet from a convenient place at any time. It brings advantages as well as disadvantages for the customers. The major hurdle for the customers to do the financial transaction is a security issue which restricted the customers to adopt this technological change. After the demonetization and during the COVID-19 period customers are inclined towards the use of online banking. This paper is focused on customer behaviour regarding online banking. Convenient sampling method was applied and data was collected through the google forms. For the analysis, SPSS 23 was used. The findings of the study reveal that the respondents are availing online banking services frequently from their home and workplace. The features they are using regularly are bill payment and online shopping.

Keywords: Online Banking, Customer Behaviour, Digital Banking, Internet Banking, Mobile Banking

INTRODUCTION

Online banking is also known as digital banking. In online banking, customers permit to do the financial transaction over the internet. Online banking is when a bank provides its services with the help of technology in the digital mode. Customers can transfer money, pay bills, and do other banking transaction in the online mode that is called online banking. In India, an ICICI bank was the first bank to launch online banking since 1996. From then till now every bank offers online banking services to its customers. Pikkarainen T, Pikkarainen K, Karjaluoto H, and Pahnla S define Internet banking as an “Internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments” (Pikkarainen T, Pikkarainen K, Karjaluoto H, and Pahnla S: 2004).

CURRENT ONLINE BANKING SERVICES IN INDIA

As the advancement took place in the banking sector and online banking raised Indian banking sector also affected by it. The Government of India and the reserve bank

of India (RBI) framing policies promoting the online banking services. Commercial and all other banks adopt technological changes and provide services accordingly. The current services provided by the banks are:

These services explained below one by one:

ATMs: ATMs are the set-up of the machine by the bank for the various purpose, but the main purpose of ATMs is to allow the customer to withdraw the money (cash) whenever they required. It is usually found outside the bank, shopping malls, schools and universities etc. At the end of 1990, public and private banks came with their ATM networks under the Indian Banks Association in Mumbai. ATM are the most reliable and efficient for the customer in the urban area and rural area. For operating the ATM, one should have an ATM card and the password of the card.

Electronic Fund Transfer (EFT): According to the United States Electronic Fund Transfer Act of 1978 it is “a funds transfer initiated through an electronic terminal, telephone, computer (including on-line banking) or magnetic tape for ordering, instructing, or authorizing a financial institution to debit or credit a consumer’s account”. It includes various method like NEFT (National Electronic Fund Transfer), RTGS (Real Time Gross Settlement), IMPS (Immediate payment system).

Internet Banking: Internet banking is that banking in which customer can perform banking activity with the help of the internet, it required only the device and internet connection.

Mobile Banking: Mobile banking is a service which allows the customer to perform the banking from their mobile phone or smartphone. This facility is provided by the bank and financial institutions. To perform internet banking software is required whereas to perform mobile banking app is required provided by the bank and financial institutions. It is 24/7 available to the customer.

Phone Banking: Phone banking is more convenient than banking. This facility is provided by every bank and financial institutions nowadays. Customer can access the basic banking facility from their convenient place, it made customer life easy. Customer can enjoy 24/7 banking, can enquire account balance, make a bill payment, transfer funds etc.

Electronic Clearing Services (ECS): Electronic clearing service is that in which bulk amount transferred from one account to another. This type of service is used to transfer regular amount like distribution of dividend, interest, salary, pension etc. by the institution. It is a non-paper-based transaction which is supported by the RBI

E-commerce: Electronic commerce is how buying and selling of goods and services take place over the internet. The funds are transferred electronically. The various types of e-commerce are Business to business B2B, consumer to business C2B, Consumer to consumer C2C, business to consumer B2C. Now, banks are providing to perform e-commerce task with the help of online banking.

UPI: Unified Payments Interface (UPI) is a system that powers multiple bank accounts into a single mobile application (of any participating bank), merging several banking features, seamless fund routing & merchant payments into one hood. It also caters to the “Peer to Peer” collect request which can be scheduled and paid as per requirement and convenience.

Debit Card: A debit card is a card in which customer can purchase goods or can make the payment as per the requirement. On a debit card, customer can only use the amount which is already deposited in the bank account. This card issued against the bank account. It eliminates the risk of carrying cash. Customer can also withdraw money from this card with the help of ATM.

Credit Card: A credit card is issued by the bank to the customer (user) known as a cardholder. In credit card, credit cardholder promises the bank to pay the amount which he used plus the charges which was agreed between them while issuing the card. It is a type of loan which is payback by the credit cardholder after a certain time limit.

CONSUMER BEHAVIOUR IN ONLINE BANKING

As the development takes place in the banking sector the online banking mounting very fast, it is mainly because of information technology which boosts online banking. The Indian banking sector also realises the importance of online banking from the customer point of view as well as from the competitive point. All countries banking sectors and Indian banking sector focused on advanced information technology and the innovative product and services included in it like ATMs, mobile banking, electronic fund transfer, debit cards, credit cards etc. As innovation takes place in the banking sector the importance of customer behaviour regarding the banking services raised. This particular study is focused on customer behaviour regarding online banking services. After examining the customer behaviour one can know why some customers prefer the online banking service, on the other hand why some don't accept it.

With the regular advancement in the online banking customer around the world can easily access their accounts from anywhere at any time, 24/7 facility provided by the bank. In India also now customer can use online banking at one click only and perform daily banking task like transfer of money, bill payment, ticket booking etc. The banking industry now dominated by the information technology, due to this banking speed increased, cost of transaction decrease, quality increase, branch cost decrease, operating cost decrease. Now a customer can enjoy the convenient banking from their place without travelling too far to avail the banking services. Despite the adoption of online banking, now bank provides modern online banking to its customers. So, it is important to check the customer behaviour regarding these services. Thus, the customer is the vital factor which affects the online banking, the

bank needs to comprehend the customer behaviour because it helps them to serve in the competitive market and can achieve the growth and success. Customer behaviour studies the customer demand for the product and services, whether they are aware of the product, acceptance of the product. The success of online banking depends upon the usage by the customer.

REVIEW OF LITERATURE

1. Ankita Pathak and Sunil Mishra (2019), the author attempted to study attitude and consumer awareness towards the use of mobile banking services. The result stated that various factors like ease to use, usefulness, and convenience makes people use the facility of mobile banking. Consumer mindset has been changing regularly primarily based on the changes in technology in the banking organization. Consumer awareness will provide an intention to use mobile banking.
2. Shaista Banu (2018), the purpose of this paper is to understand the factors which can affect the level of customer satisfaction among online banking customers. The researcher concluded that banks focus should be on retaining the existing customers and focus on the untapped market and having clear communicating strategies on time so that the banks do not lose their customers to their competitors.
3. Dr Vipin Choudhary and Vikas Chauhan, (2015), the present paper attempts to understand the concept of internet banking as well as study the benefit of internet banking from the perspective of consumers as well as banks. Further, this paper discusses the challenges and opportunities associated with internet banking in the Indian context. The discussion concludes that the concept of internet banking is slowly gaining acceptance in the Indian scenario and efforts are being made by government agencies to make it more popular among consumers.
4. Reeta and Manju Asht (2016), this particular paper endeavours to explore the sundry online customer services provided by the banking industry in India and additionally discussed the magnification rate and prospects of the e-banking services provided by the Indian banks in this regard. The study concluded that e-banking is accepted in the banking sector and an abundance of work can be done in this sector to make it more advance, safe and more expeditious accommodation provider in the finance sector.
5. Harsha Sahu (2016), researcher identify that every bank in India is restructuring its business strategies towards new prospects offered by e-banking because e-banking has empowered banks to scale high, change preemptive behaviour and thus bring about new opportunities to their organization. Around the world, electronic banking services have spread quickly in recent years. From the customers' point of view, the use of the internet offers quicker access, is more suitable and available around the clock irrespective of the customer's location. For banks, the use of internet has considerably reduced the physical costs of banking operations. It has improved the bank's proficiency and competitiveness.

The impact of e-banking is not limited to developing economies. Even underdeveloped countries have found tremendous new business opportunities in electronic banking in terms of ease, simplicity and cost of transactions.

6. Sadaf Firdous (2017), the researcher wants to add the existing knowledge in the electronic banking field of study. To help the banks and policymakers have a better understanding of the internet banking dimensions and their contributions towards customer satisfaction. Especially since not much research has been done in this regard in India which has become the hub of e-banking development after the recent demonetization by the present government, enabling people to go cashless and enhance a digital economy. The result implicated that internet banking service quality dimensions have a significant impact on the customer satisfaction of internet banking customers. Each of the dimension namely efficiency, system availability, fulfilment, privacy, contact, responsiveness and contact individually contribute 70% to the overall customer satisfaction in internet banking.
7. Gowtham Ramkumar (2017), the study understands the concept of financial inclusion and cashless economy, to identify the benefits of financial inclusion and the benefits of a cashless economy. From the study, it is clear that the major advantages of financial inclusion are an increase in demand for financial products, growth in GDP, capital formation and accessibility of banking finance to rural areas. The major advantages of becoming cashless economy are exposure to financial services, avoidance of carrying cash, tracking money laundering activities, convenience in handling financial transactions, fall in parallel economy transactions and increased security of funds. However, there are barriers to achieve good economic growth like a parallel economy, money laundering etc.
8. M. Mohanraj and A. T. Jaganathan (2017), the main aim of the study is to find customer attitude towards mobile banking and their change of behaviour with mobile banking services. Study finds that Banks has to create certain programs to the customers regarding the dynamic change in the mobile banking process, which will make the customer satisfied with the service of banks.
9. Vaishali Agrahari and Niket Shukla (2019), the study has been conducted to better-understanding customer satisfaction towards online banking system offered by the bank of India in Bilaspur city of Chhattisgarh. Study finds that internet banking facility must be made available in all branches of Bank of India and each section of these Banks should be computerized even in rural areas also.
10. Anchit Jhamb and Swati Aggarwal (2018), this paper is an attempt to explore the usage of mobiles, internet and financial services available in the rural and remote areas. It analyses that Usage of mobile banking in the rural area is increasing at a good rate i.e 277.68%. With the introduction of private companies, awareness and usage of mobile and internet in the country increase and increase use of financial services through internet there has been an increase in the number of companies which provide the platform to use these services.

11. Dr S. Ramakoteswara Rao and Sripada Naresh (2017), Researcher Focused on prospects and challenges of Cashless Transaction System in India. The result shows that digital transactions are traceable, therefore easily taxable, leaving no room for the circulation of black money. The benefits of cashless economy and challenges are transactions mainly in cash, ATM use for cash withdrawals, mobile internet penetration remain weak in rural India and dominated by small retailers.
12. Komal Kaur, *et al.* (2016), Study was conducted to assess awareness, level of utilization and explores barriers towards e-banking among 200 bank customers in East Delhi, India. Study reveals that (93.5%) were aware of the term e-banking whereas 87.2% were about the services of e-banking. 70.1% have utilized e-banking services and most of them have used 4 times per month. The topmost used services were ATM, online shopping, money transfer, credit card and SMS banking. SBI is among the topmost choice of customers for using e-banking services.

RESEARCH METHODOLOGY

SAMPLING

To achieve the objectives of the study a sample size of 96 respondents was finalized. Out of the 79 valid response was collected. So, the response rate was 82.29%. Convenient sampling was used. **[Response Rate = (Responses Returned) / (Surveys Sent Out) * 100.]**

DATA COLLECTION

Data collection is a very important and crucial part of any study. For the present study data were collected through the research instrument (structured questionnaire), it is a primary data. Contact details of respondents were obtained from local administration/resident's associations in Hamirpur. Google survey forms were used for the survey due to COVID-19 pandemic.

DATA INTERPRETATION

This section represents the results and outcome which is derived from the data after analysing. It includes first the reliability of the questionnaire and then the demographic profile of the respondents.

Table 1: Reliability of the Questionnaire

Variables	Items	Cronbach α (Value)
Cost/Price Factor	4	.838
Customer Accessibility	8	.911
Perceive Ease of Use	7	.919
Customer reluctant to change	4	.845
Customer Awareness	6	.888
Security Concern/Issues	8	.887

The study has used a structured questionnaire to obtain empirical data on digital finance and financial inclusion: a study of customer behaviour towards online banking services. This section reveals the reliability coefficients of the items used to measure the study variables. The research instrument consisted of questions covering the variables of Cost/price Factor, Customer Accessibility, Perceive Ease of Use, Customer reluctant to change, Customer Awareness, Security Concern/Issues. The Cost/price Factor include (4 items), Customer Accessibility (8 items), Perceive Ease of Use (7 items), Customer reluctant to change (4 items), Customer Awareness (6 items), and Security Concern/Issues (8 items). The reliability coefficients of variables range from .838 to .919. As per the guidelines of Nunnally (1978) to interpret the values of Cronbach α , a score greater than .7 is acceptable and proves the reliability of the scale items. Thus, the reliability scores presented in table 6.2 substantiates the consistency of the items derived for measuring the variables of the study.

Table 2: Demographic Profile of the Respondents

Variables	Scale	Number	Percentage
Area	Urban	37	46.8%
	Rural	42	53.2%
Gender	Male	57	72.2%
	Female	22	27.8%
Age	Up to 30 Years	49	62%
	31 to 40 Years	26	32.9%
	41 to 50 Years	2	2.5%
	Above 50 Years	2	2.5%
Marital Status	Married	31	39.2%
	Unmarried	46	58.2%
	Divorce	0	0%
	Others	2	2.5%
Education Qualification	Schooling	5	6.3%
	Graduate	31	39.2%
	Post-graduate	34	43%
	Others	9	11.4%
Occupation	Students	40	50.6%
	Govt. employees	7	8.9%
	Private employees	25	31.6%
	Others	7	8.9%
Income	Up to Rs 40000	57	72.2%
	40001 to Rs 60000	11	13.9%
	60001 to Rs 80000	5	6.3%
	Above Rs 80000	6	7.6%
Experience	0 to 1 Year	37	48.7%
	1 to 5 Years	14	18.4%
	6 to 10 Years	12	15.8%
	More than 10 Years	13	17.1%

The sample constitutes about 72.2% male and 27.8% female participants. The age group of the respondents were Up to 30 Years (62%), 31-40 years (32.9%), 41-50 years and 51-60 years (2.5%). Thus, the majority of the respondents are young (below 40 years). As per marital status, concern Unmarried (58.2%), married (39.2%) and others are (2.5%). The participants had the educational qualification up to Schooling (6.3%), graduation (39.2%), post-graduation (43%) and others (11.4%).

The occupation of the participants were students (50.6%), Government employees (8.9%), private employees (31.6%) and others (8.9%). Income of the respondents were Up to Rs40000 (72.2%), 40001 to Rs 60000 (13.9%), 60001 to Rs 80000 (6.3%) and Above Rs 80000 (7.6%). The work experience of the respondents was 0-1 year (48.7%), 1 to 5 years (18.4%), 6-10 years (15.8%), more than 10 years (17.1%). Thus, the demographic characteristics of the sample (table 6.1) reveal that the majority of participants were male, aged between up to 30 years, held the educational qualification of post-graduate, had a work experience of 0 to 1 years.

Table 3: Information about Customer Behaviour

Variables	Scale	Number	Percentage
Aware of Financial Inclusion and Online Banking	Yes	62	78.4%
	No	8	10.1%
	May be	9	11.3%
Have a Bank Account	Yes	75	94.9%
	No	4	5.1%
Type of Bank Account	Saving	68	89.5%
	Current	13	17.1%
	RD	9	11.8%
	FD and other	15	19.7%
Availing Online Banking	Yes	68	86.0%
	No	11	13.9%
If yes, which online banking channel are you using	ATM	57	74%
	Net Banking	43	55.8%
	Mobile banking	40	51.9%
	E-Wallet	21	27.3%
	UPI	37	48.1%
	Others	16	20.8%
Modern online banking services provided by your bank	New EMV debit card	24	30.8%
	UPI Facility	45	57.7%
	E-wallet	22	28.2%
	24 hours service	38	48.7%
	Others	19	24.4%
If no, why have you never used online banking services	Do not have the Internet at home.	13	33.3%
	Don't trust internet services when it comes to managing my money.	11	28.2%
	Online services don't enable me to do what I want to do.	7	17.9%
	I prefer to have personal human relationships.	15	38.5%
	Find the process too difficult	9	23.1%

Table 3 illustrates that (78.4%) respondents were aware of financial inclusion, (10.1%) were not aware and (11.3%) are may be aware of the financial inclusion. Out of 79 valid responses, (94.9%) were having a bank account and only(5.1%) were not having a bank account. (89.5%) participants were using the saving account, (17.1%) were availing current account, (11.8%) were using RD (recurring deposit) account and (19.7%) were availing FD (Fixed account) and other accounts. As per the, availing online banking concern (86.0%) respondents were availing the online banking and (13.9%) were not availing the online banking. The channel used for online banking from the participants, ATM (74%), Net banking (55.8%), Mobile banking (51.9%), E-Wallet (27.3%), UPI (48.1%) and others (20.8%). The modern online banking provides by the respondent's bank were New EMV debit card (30.8%), UPI Facility (57.7%), E-Wallet (28.2%), 24 Hours service (48.7%) and others (24.4%). The respondents who never used online banking due to they do not have the internet at home (33.3%), don't trust internet services when it comes to managing money (28.2%), Online services don't enable me to do what I want to do (17.9%), I prefer to have personal human relation (38.5%) and find the process too difficult (23.1%). The term financial inclusion is familiar among the respondents and the majority of them were having a bank account and they are availing of online banking; ATM is the most preferable method of online banking among respondents.

Table 4: Usage of Online Banking

Variables	Scale	Number	Percentage
Use of Online Banking	Daily	24	35.2%
	Weekly	24	35.2%
	Once a week	4	5.8%
	Once in a month	13	19.11%
	Once in 6 months	2	2.9%
The Place for Access to Internet	Workplace	40	51.9%
	Home	67	87%
	College	19	24.7%
	Cyber café	3	3.9%
	Other	1	1.3%
Online Banking Feature Frequently Used	Bill payment	51	68.9%
	Account inquiry	34	45.9%
	Online shopping	53	71.6%
	Transfer funds	44	59.5%
	Process payroll	10	13.5%
	Other	1	1.4%

The above table 4 shows the usage of online banking among customers, those participants used online banking on daily basis were (35.2%), on weekly basis (35.2%), once a week (5.8%), Once in a month (19.11%), Once in 6 months (2.9%). The place where respondents were commonly used online banking is the workplace (51.9%), Home (87%), College (24.7%), Cybercafé (3.9%), other (1%). The feature which

is frequently used is bill payment (68.9%), account inquiry (45.9%), online shopping (71.6%), transfer funds(59.5%), process payroll (13.5%), other (1.4%). Thus, it depicted that participants were used online banking commonly from their home and workplace for online shopping and bill payment, it is used on a daily and weekly basis.

Table 5: Cost/Price Factor Related to Online Banking

	It removes the need to visit bank branches and reduce the cost involved in travelling	It is convenient because it eliminates the risk of carrying cash	It is time-saving and effortless in managing finance	It provides lower bill paying facility and easier access to financial services
Strongly Agree-5	46	43	41	36
Agree-4	20	22	24	30
Neutral-3	8	10	11	10
Disagree-2	1	1	0	0
Strongly Disagree-1	1	0	0	0

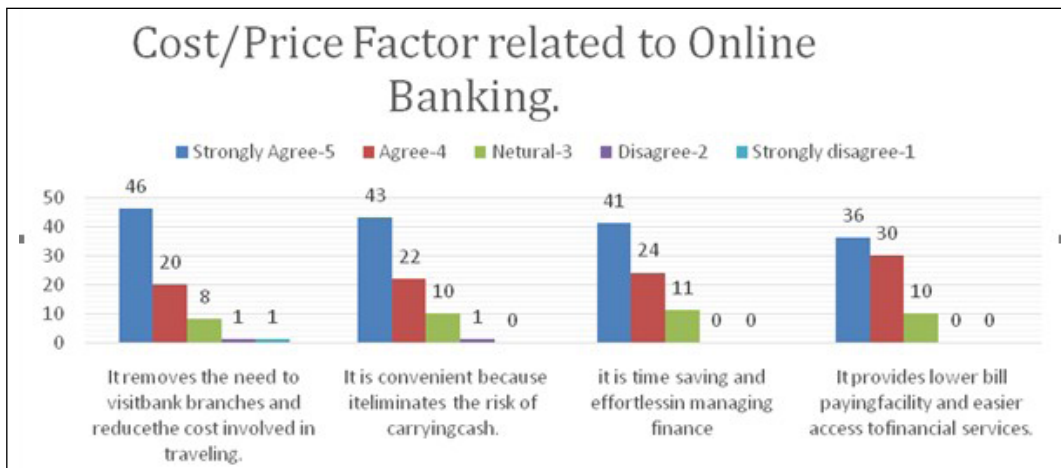
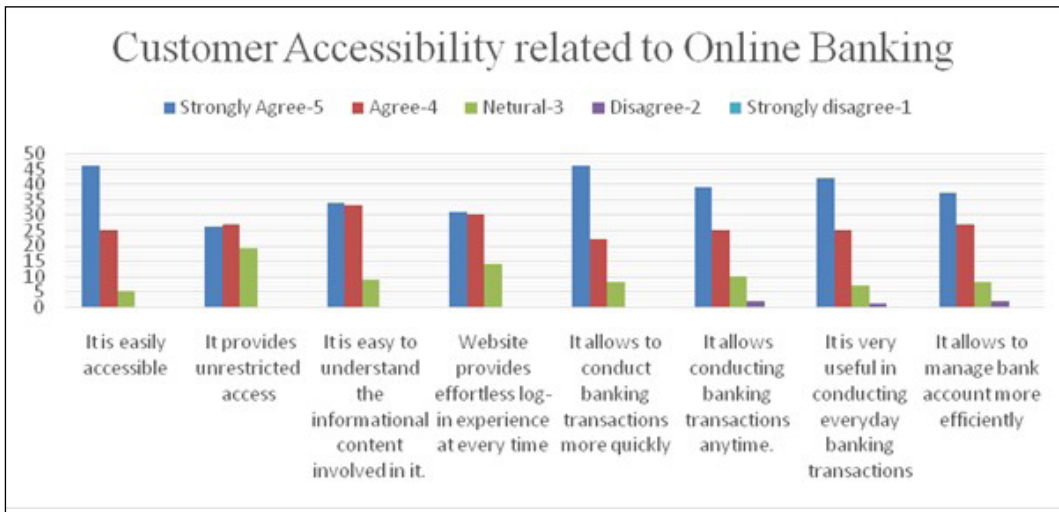


Fig. 1

The above table illustrates that, cost/Price factors which affect the adoption and performance of online banking. 46 and 20 respondents were strongly agreed and agreed that online banking removes the need to visit bank branches and reduced the cost involved in travelling, 43 and 22 were strongly agreed and agreed that it is convenient because it eliminates the risk of carrying cash, 41 and 24 were strongly agreed and agreed that it is time-saving and effortless in managing finance, 36 and 30 were strongly agreed and agreed that it provides lower bill paying facility and easier access to financial services. Whereas, 8,10,11,10 respondents were neutral about the cost/price factors of online banking. A smaller number of participants disagreed and strongly disagreed with the cost/price factor.

Table 6: Customer Accessibility Related to Online Banking

	It is easily accessible	It provides unrestricted access	It is easy to understand the informational content involved in it.	The website provides effortless log-in experience at every time	It allows conducting banking transactions more quickly	It allows conducting banking transactions anytime	It is very useful in conducting everyday banking transactions	It allows to manage bank account more efficiently
Strongly Agree-5	46	26	34	31	46	39	42	37
Agree-4	25	27	33	30	22	25	25	27
Netural-3	5	19	9	14	8	10	7	8
Disagree-2	0	0	0	0	0	2	1	2
Strongly Disagree-1	0	0	0	0	0	0	0	0

**Fig. 2**

The above table explains that, Customer Accessibility factors which affect the adoption and performance of online banking, 46 and 25 respondents were strongly agreed and agreed that online banking is easily accessible, 26 and 27 were strongly agreed and agreed that it provides unrestricted access, 34 and 33 were strongly agreed and agreed that it is easy to understand the informational content involved in it, 31 and 30 were strongly agreed and agreed that website provides effortless login experience at every time, 46 and 22 were strongly agreed and agreed that it allows conducting banking transactions more quickly, 39 and 25 were strongly agreed and agreed that it allows conducting banking transactions anytime, 42 and 25 were strongly agreed and agreed that it is very useful in conducting every-day banking transactions, 37 and 27 were strongly agreed and agreed that it allows to maintained bank account more efficiently.

Whereas, few respondents were neutral about the Customer Accessibility factors of online banking.

Table 7: Perceived Ease of Use related to Online Banking

	Using online banking service, it is easy for me to accomplish my banking tasks.	Language and information content are not complex.	It allows easy to find and change information.	Instructions given on the website are clear and easily understandable	It is a user-friendly system.	Convenient hours of operation (24 X7)	Its services are clear and easy to use.
Strongly Agree-5	43	32	25	29	34	36	34
Agree-4	21	27	35	33	28	26	31
Neutral-3	12	15	11	12	10	11	9
Disagree-2	0	2	2	0	0	0	0
Strongly disagree-1	0	0	0	0	0	1	0

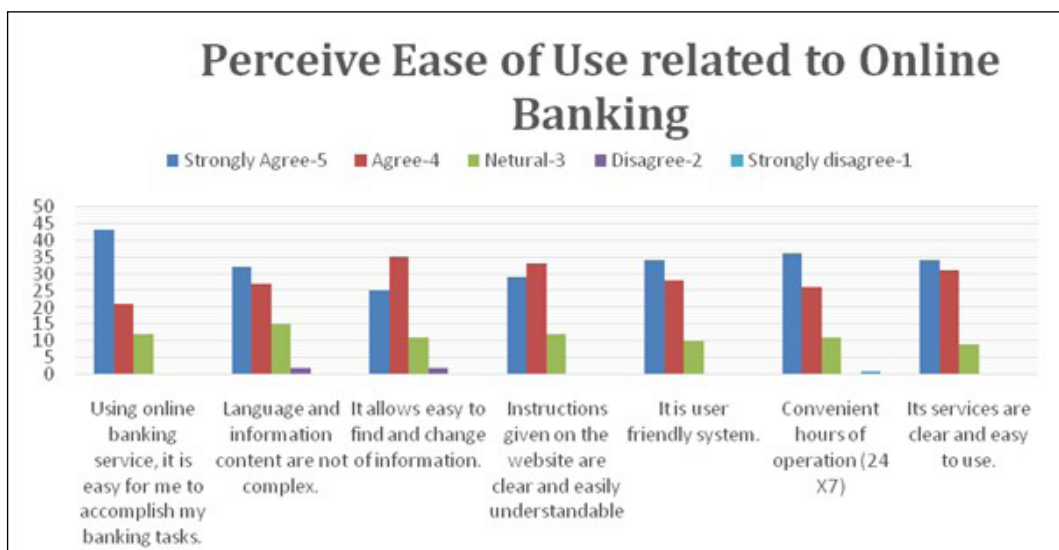


Fig. 3

The above table explains that, Perceive Ease of Use factors which affect the adoption and performance of online banking. 43 and 21 respondents were strongly agreed and agreed that it is easy for me to accomplish my banking tasks, 32 and 27 were strongly agreed and agreed that language and information content are not complex, 25 and 35 were strongly agreed and agreed that it allows easy to find out the change, 29 and 33 were strongly agreed and agreed that instruction given on the website are clear and easily understandable, 34 and 28 were strongly agreed and agreed that it is user friendly, 36 and 26 were strongly agreed and agreed that it has convenient hours of operation, 34 and 31 were strongly agreed and agreed that its service is easy and clear to use.

Some respondents were neutral about the Perceive Ease of Use factors of online banking that were 15 and 11 mostly. Those participants were disagreed and strongly disagreed with the Perceive Ease of Use factor were 2 and 1 only.

Table 8: Customer Reluctant to Change/ Customer Behaviour related to Online Banking

	I can adopt online banking for making payments of bills, transfer money to others through UPI, E-wallet, new EMV debitcard etc.	I can apply for loans through online banking.	I can inquire about bank balance at any time and from anywhere.	I can book air tickets / train tickets etc., through online banking.	I can now perform all money related transaction through online banking.
Strongly Agree-5	41	14	38	38	35
Agree-4	26	34	19	23	28
Netural-3	6	18	12	10	8
Disagree-2	0	4	1	0	1
Strongly disagree-1	0	2	0	1	0

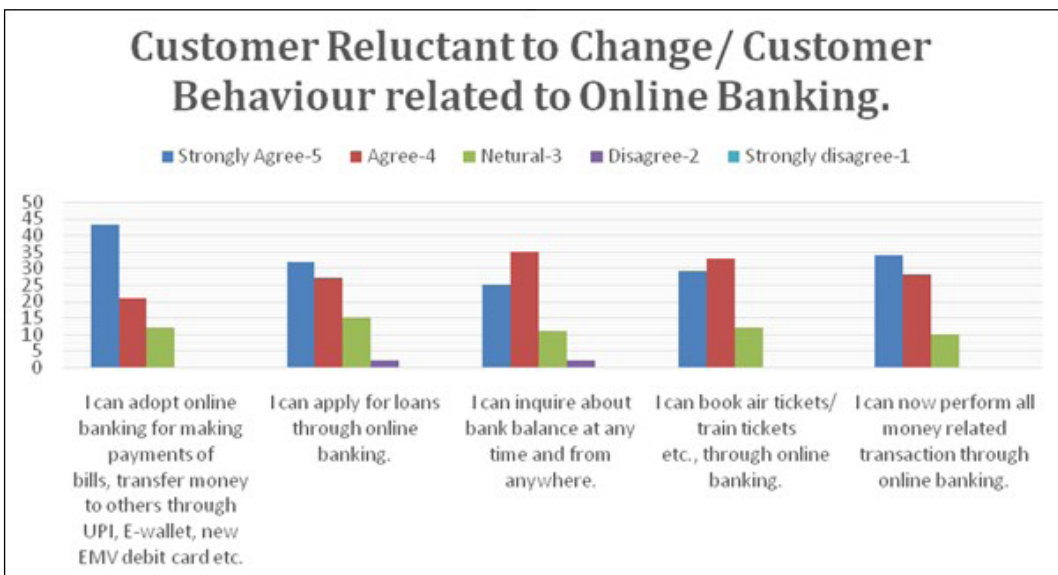


Fig. 4

The above table explains that Customer Reluctant to Change factors which affect the adoption and performance of online banking. 41 and 26 respondents were strongly agreed and agreed that I can adopt online banking for making payments of bills, transfer money to others through UPI, E- wallet, new EMV debit card etc., 14 and 34 were strongly agreed and agreed that I can apply for loans through online banking, 38 and 19 were strongly agreed and agreed that I can inquire about bank balance at any time and from anywhere, 38 and 23 were strongly agreed and agreed that I can

book air tickets/ train ticketsetc., through online banking, 35 and 28 were strongly agreed and agreed that I can now perform all money related transaction through online banking. Whereas, 6,18,12,10,8 respondents were neutral about the Customer Reluctant to Change factors of online banking. A smaller number of participants disagreed and strongly disagreed with the Customer Reluctant to Change factor.

Table 9: Customer Awareness Related to Online Banking

	Banks time to time conduct seminars to educate customers about Online banking.	Banks provide information for the new changes launched in the online banking	Banks Staff provide help in case of any query regarding online banking.	Customers are provided useful tips by the banks for using online banking services.	Banks make Customers aware of precautions to be taken while transacting through online banking.	Banks provide email and SMS alter for providing security knowledge.
Strongly Agree-5	21	20	21	19	21	27
Agree-4	27	37	32	33	39	32
Netural-3	20	10	16	16	10	12
Disagree-2	2	5	1	2	1	1
Strongly Disagree-1	3	0	2	1	0	0

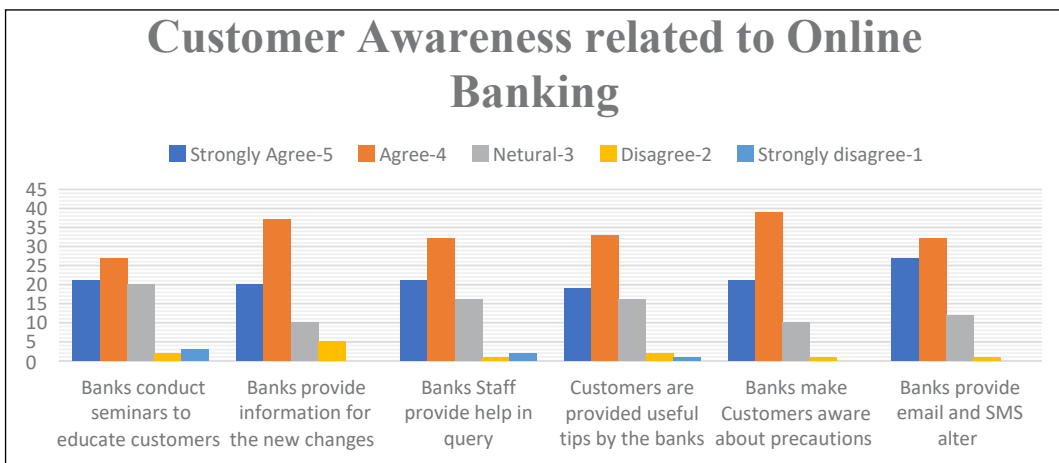


Fig. 5

The above table explains that, Customer Awareness factors which affect the adoption and performance of online banking. 21 and 27 respondents were strongly agreed and agreed that Banks time to time conduct seminars to educate customers about Online banking, 20 and 37 were strongly agreed and agreed that Banks provide information for the new changes launched in the online banking, 21 and 32 were strongly agreed and agreed that Banks Staff provide help in case of any query regarding online banking, 19 and 33 were strongly agreed and agreed that Customers are provided useful tips

by the banks for using of online banking services, 21 and 39 were strongly agreed and agreed that Banks make Customers aware about precautions to be taken while transacting through online banking, 27 and 32 were strongly agreed and agreed that Banks provide email and SMS alert for providing security knowledge. Respondents were neutral about the Customer Awareness factors of online banking that were around 20 to 16. However, 5 and 3 participants were disagreed and strongly disagreed with the Customer Awareness factor.

Table 10: Security Concern/ Security Issues Related to Online Banking

	Security plays a vital role in online banking adoption and continued usage	Security threat like unauthorized access to the accounts through network attacks or hacking etc is the barriers to online banking.	Providing personal information across the Internet to a bank is not risky	Online banking is a secure way through which to conduct transactions	Legal structures, such as the bank's terms and conditions regarding the use of online banking protect from problems while using.	Technological structures, such as firewall and encryption on the online banking website make it safe for them to conduct banking transaction there.	Customers feel that the online banking website, in general, is a robust and safe environment in which they perform banking transactions.	Customer information is kept confidential.
Strongly Agree-5	36	31	13	20	16	22	22	23
Agree-4	28	26	32	35	38	29	34	33
Neutral-3	7	11	22	14	15	17	14	13
Disagree-2	0	2	2	2	1	2	0	0
Strongly Disagree-1	0	1	2	0	0	0	0	0

The above table explains that, Security Concern factors which affect the adoption and performance of online banking. 36 and 28 respondents were strongly agreed and agreed that Security plays a vital role in online banking adoption and continued usage, 31 and 26 were strongly agreed and agreed that Security threat like unauthorized access to the accounts through network attacks or hacking etc are the barriers for online banking, 13 and 32 were strongly agreed and agreed that Providing personal information across the Internet to a bank is not risky, 20 and 35 were strongly agreed and agreed that Online banking is a secure way through which to conduct transactions, 16 and 38 were strongly agreed and agreed that Customers feel assured that legal structures, such as the bank's terms and conditions regarding the use of online banking protect from problems while using the online banking web site., 22 and 29 were strongly agreed and agreed that Customers feel assured that technological structures, such as firewall and encryption on the online banking web site make it safe for them to conduct banking transaction there. 22 and 34 were strongly agreed and agreed that Customers feel that the online banking web site, in general, is a robust and safe environment in

which they perform banking transactions, 23 and 33 were strongly agreed and agreed that Customer information is kept confidential. Whereas, 22 to 7 respondents were neutral about the Security Concern factors of online banking. Few participants were disagreed and strongly disagreed with the Security Concern factor.

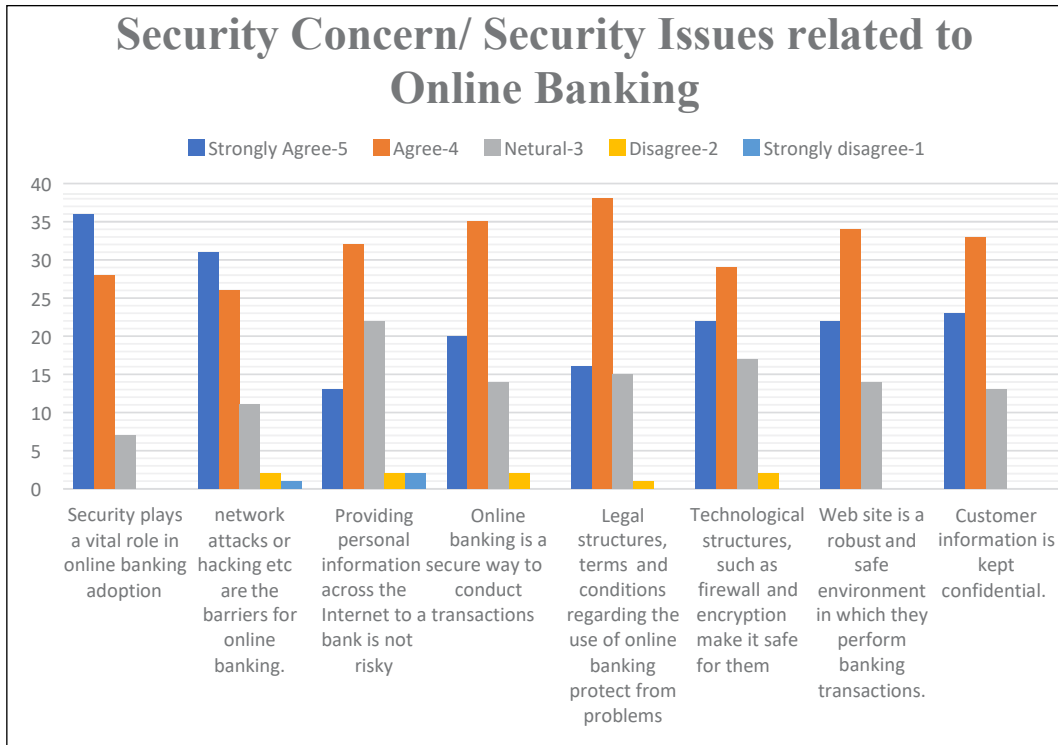


Fig. 6

FINDINGS

The findings of the study are:

1. The research instrument is reliable and feasible because the value of Cronbach α is .838 to .919.
2. In the study, male respondents are (72.2%) which is more than female (27.8%).
3. The study found that young customers (Upto 30 years) are more inclined towards the use of online banking as compared to elder customers (above 50 Years).
4. As per the education, qualifications are concern 43% of participants are postgraduate, 39.2% are graduate. So, with the increase in qualification usage of online banking is increase.
5. According to the current study, Students are more motivated towards the use of online banking.

6. 78.4% of respondents are aware of the term financial inclusion and 94.9% are financial included (having bank account). Out of the 86.0% are using online banking services and managing their financial requirements.
7. In the current study, ATM is the preferred method/channel of availing online banking services in Himachal Pradesh.
8. The respondents are availing online banking services frequently from their home and workplace. The features they are using regularly are bill payment and online shopping.
9. The modern online banking service provided by the respondent's bank is UPI facility and 24 hours of online banking services.
10. Study reveals that respondents are strongly agreed that online banking reduces the cost involved in travelling for traditionally availing the banking service.
11. Participants in the study are strongly agreed that online banking is easily accessible, provide unrestricted access, login is effortless, perform banking transaction more quickly, conduct banking transaction at any time.
12. Respondents are perceiving that online banking is easy to use because the information is not complex, information can change easily, instruction on the website is clear and it is convenient, user friendly.
13. The study found that customers are reluctant to change, they adopt the changes which is made in online banking by the bank.
14. For the digital financial inclusion and use of online banking service customer awareness play a crucial part, in this study customer agreed that bank provides educational mail and messages.
15. Security is a measure issue while adoption the online banking services, study reveals that network attacks by hackers are the major barrier towards the usage of online banking.

CONCLUSION

Now the world is moving towards the digital platform and financial sector has also undergone technological changes. Now, financial inclusion takes step towards the digital financial inclusion and banking services are provided in the online platform electronically. Customers are more inclined towards digital/online banking instead of traditional banking. They fulfil their financial needs electronically instead of depending upon the cash/ physical mode. The results of the study reveal that customers are utilizing online banking from their home and workplace. ATM is the most preferable mode of online banking.

REFERENCES

- [1] Pikkarainen, Tero & Pikkarainen, Kari & Karjaluoto, Heikki & Pahnla, Seppo. (2004). Consumer acceptance of online banking: An extension of the Technology Acceptance Model. *Internet Research*, 14(3), 224–235. Doi:10.1108/10662240410542652.
- [2] Pathak A and Mishra S (2019). Consumer Behaviour and Attitude towards Mobile Banking: An Empirical Analysis. *International Journal of Innovative Technology and Exploring Engineering*, 8(6S), 494–499.
- [3] Banu S. (2018) A Study on Factors Affecting Level of Customer Satisfaction Towards Online Banking in Bangalore City. *Advance Research Journal of Multidisciplinary Discoveries*, 25(3), 16–22
- [4] Chauhan, V., & Choudhary, D.V. (2015). Internet Banking: Challenges and Opportunities in Indian Context. *Journal of Management Sciences and Technology*, 2 (3), 29–40.
- [5] Clonia, R & Asht, M. (2016). E-banking in India: Current and future prospects. *International Journal of Applied Business and Economic Research*, 14(7), 1–13.
- [6] Sahu Harsha (2016). An Empirical Study of E- Banking Services in India. *International Journal for Innovative Research in Science & Technology*, 3(6), 123–130.
- [7] Firdous S & Farooqi R (2017). Impact of Internet Banking Service Quality on Customer Satisfaction. *Journal of Internet Banking and Commerce*, 22(1), 1–17.
- [8] Gowtham R (2017). A Study on The Benefits of Financial Inclusion and Cashless Economy for India. *International Journal of Economic and Business Review*, 5(8), 182–186.
- [9] Mohanraj M & Jaganathan A.T (2017). A Study on Customer Attitude towards Mobile Banking with Special Reference to Erode District. *International Journal of Trend in Scientific Research and Development*, 2(1), 258–263.
- [10] Agrahari V & Shukla N (2019). A study on awareness and perception towards online banking systems with special reference to Bank of India in Bilaspur city of Chhattisgarh. *International Journal of Advance Research, Ideas and Innovations in Technology*, 5(2), 1939–1941.
- [11] Jhamb & Aggarwal (2018), Digitalized Financial Inclusion: A Cause of Development in India, *Business and Economics Journal*, 9(1), 1–2.
- [12] Rao S, R & Naresh S (2017), Challenges and Prospects of Cashless Economy in India, *International Journal & Magazine of Engineering, Technology, Management and Research*, 4(10), 304– 310.
- [13] Kaur K, Subedi N, Chaudhary K & Parajuli S (2016). A Study on Awareness, Utilization and Barriers towards E- Banking in East Delhi, India. *International Journal of Innovative Studies in Sociology and Humanities*, 1(1) 44–52.

Co-operative Banks in Uttarakhand

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Abstract: Co-operative banks fulfil the over 50% rural credit need of total rural credit need in India. These banks are small size mostly local area banks but works of these banks are big. Rural co-operative banks establish with the basic objective of providing banking services to rural people and farmers and urban co-operative banks establish with the basic objective of providing banking service to urban people who are not reached to the other private and public sector banks. Cooperative banks are commercial banks and provide general banking services to the people after getting a license from RBI and registered with State Government. This study aims to present the types of co-operative banks in Uttarakhand, co-operative banks in Uttarakhand, Number of branches of each co-operative bank working in Uttarakhand, Scheduled and non-scheduled cooperative banks in Uttarakhand and present the ownership hierarchy of co-operative banks in Uttarakhand. Results present the two types of 16 co-operative banks are working in Uttarakhand with its 394 branches all over in Uttarakhand. More than 90% ownership of 11 co-operative banks is in the hand of farmers and the remaining 5 co-operative banks ownership is private. This paper is helpful for understanding the working of co-operative banks in Uttarakhand as well as in India.

Keywords: Co-operative Banks, Uttarakhand, Types of Co-operative Banks, Capital Structure of Co-operative Banks.

JEL Classification Code: G21, P13, P17, R11

INTRODUCTION

Co-operative banks are commercial banks which are providing banking services to the general people but they operate their activities at a small level and mostly co-operative banks limit up to the district or state level. Co-operative banks are registered under relevant state co-operative societies act and all co-operative banks of Uttarakhand are registered under the Uttaranchal Cooperative Bank Act, 2003 and RBI issued the licenses to these banks to do banking business in India. RBI allows three types of co-operative banks in India and these banks are State Cooperative Banks, District Co-operative Banks and Urban Co-operative Banks. According to RBI Chapter IV of Development of Co-operative Banking, “Under the Banking Regulation Act, 1949 only Urban Co-operative Banks (UCBs), State Co-operative Banks (STCBs)

and Central Cooperative Banks (CCBs) are qualified to be called as banks in the co-operative sector.” <https://www.rbi.org.in/upload/Publications/PDFs/58848.pdf>

According to Uttaranchal Co-operative Bank Act, 2003, a Co-operative bank means a committee that conducts banking business as defined in subsection (b) of section 5 of the Banking Regulation Act, 1949 and section 5(b) of Banking Regulation Act, 1949 defines Banking as, “banking” means the accepting, for the purpose of lending or investment, of deposits of money from the public, repayable on demand or otherwise, and withdrawal by cheque, draft, order or otherwise. So as all co-operative banks are providing general banking services as motioned in Banking Regulation Act, 1949.

REVIEW OF LITERATURE

LEKSHMI V. (2019)

The origin of the co-operative banks in Kerala was mainly for common people. In the three tier co-operative structure, the primary agricultural co-operative societies are meant to mingle freely with common people. As earlier said there are many primary agricultural co-operative societies which not only satisfy the financial requirements of the common people, but also distribute seeds, fertilizers and agricultural implements. And Kerala State Cooperative Bank through its District Cooperative Bank render all the assistance to these Primary Agricultural Cooperative Societies. This is the unique quality of Kerala State Cooperative Bank.

HEMA ADHIKARI, DR. KAMAL JOSHI (2018)

District co-operative banks are two folds, on the one hand they are supposed to provide cheap and timely credit to rural masses and on the other hand have to ensure their profitability and viability in turbulent interest regime. In conclusion, it can be pointed out that the financing of agricultural development as a part of rural development, through the concerned District co-operative bank has been partially effective.

BOSE G. SUBASHCHANDIRA, NAGARAJAN P. (2018)

The need of the time is that government should see the co-operative banking model as an appropriate structure for achieving the goals of financial inclusion. To conclude it all, the banking sector in India is progressing with the increased growth in customer base, due to the newly enhanced and innovative facilities offered by banks.

NIVEDITA (2018)

Cooperative was started in India in 1904. We have seen many successful cooperative organizations in India like Amul. And not only these but these days we can see that cooperatives are successful in banking also. The Himachal Pradesh State Cooperative Bank is a live example of this fact.

RAVINDRAN, R. (2011)

Co-operation is a wonderful principle, to make success in Co-operative Bank, co-operation from govt, employees, customers and general public is needed. Co-operative bank's success depends on successful financial management, human resources management and customer relation management.

MERRY ELIZABETH JOHN, JOBY JOSEPH THOOMKUZHY (2018)

On the basis of the analysis of the study it can be concluded that the people under the low-income category are the main service takers of the cooperative banks. Even though they are comfortable with the service rates, they are dissatisfied with the bank in updating them with the information of new services.

AIM OF THE STUDY

This study aims to present the types of co-operative banks in Uttarakhand, co-operative banks in Uttarakhand, Number of branches of each co-operative bank working in Uttarakhand, Scheduled and non-scheduled co-operative banks in Uttarakhand and present the ownership hierarchy of cooperative banks in Uttarakhand.

RESEARCH METHODOLOGY

This study based on primary and secondary data. To achieve the objectives annual reports of 16 co-operative banks have been collected and analyzed. These annual reports are not available online and these annual reports have been collected from the head office of all these 16 cooperative banks established in the many places of Uttarakhand. Some primary information collected which was not available in the Annual Reports. This study mainly based on the Annual Report of 2017-18 and 2018-19 of 16 co-operative banks of Uttarakhand.

RESULTS AND DISCUSSION

There are 16 Co-operative banks in Uttarakhand which are classified into two groups which are further subdivided into three types.

1. Rural Co-operative Banks
 - State Co-operative Banks
 - District Co-operative Banks
2. Urban Co-operative Banks

11 rural co-operative banks are working in Uttarakhand out of which 1 rural co-operative bank is State Cooperative Bank and 10 rural co-operative banks are district co-operative banks. 5 urban co-operative banks are also working in Uttarakhand. Co-operative banks are small size banks which generally work within the limit of a

state or district. In Uttarakhand 1 state co-operative bank and 5 urban co-operative banks are working all over Uttarakhand and 10 district cooperative banks are working within the limit of one or two districts. These 16 co-operative banks are as follows;

Table 1: Co-operative Banks of Uttarakhand

S. No	Name of Bank	No of Branches	Working Area	Scheduled and Non-scheduled	Work with Bank	Bank Type
1	Uttarakhand State Co-operative Bank	15	Uttarakhand State	Scheduled	10 DCB	Rural Co-operative Banks
2	Almora District Co-operative Bank	26	Almora and Bageshwar District	Non-scheduled	98 PACS	
3	Pithoragarh District Co-operative Bank	27	Pithoragarh and Champawat District	Non-scheduled	135 PACS	
4	Nainital District Co-operative Bank	33	Nainital District	Non-scheduled	53 PACS	
5	Udham Singh Nagar District Co-operative Bank	33	Udham Singh Nagar District	Non-scheduled	35 PACS	
6	Chamoli District Co-operative Bank	29	Chamoli and Rudraprayag District	Non-scheduled	80 PACS	
7	Dehradun District Co-operative Bank	23	Dehradun District	Non-scheduled	39 PACS	
8	Garhwal (Kotdwar) District Co-operative Bank	25	Garhwal (Kotdwar) District	Non-scheduled	132 PACS	
9	Tehri District Co-operative Bank	35	Tehri Distict	Non-scheduled	99 PACS	
10	Uttarkashi District Co-operative Bank	17	Uttarkashi District	Non-scheduled	44 PACS	
11	Haridwar District Co-operative Bank	23	Haridwar District	Non-scheduled	45 PACS	
	Total	286			760 PACS	
12	Almora Urban Co-Operative Bank	51	Uttarakhand State	Non-scheduled	N/A	Urban Co-operative Banks
13	Kashipur Urban Co-operative Bank	13	Uttarakhand State	Non-scheduled	N/A	
14	Kurmanchal Bank	41	Uttarakhand State	Non-scheduled	N/A	
15	Dehradun Urban Co-operative Bank Ltd	2	Uttarakhand State	Non-scheduled	N/A	
16	Rishikesh Uttarakhand Co-op. Bank Ltd	1	Uttarakhand State	Non-scheduled	N/A	
	Total	108				

Source: Annual Reports of Above Mentioned 16 Banks and Primary Data

In Uttarakhand 1 State Co-operative Bank is working state level, 10 District Co-operative Banks are working at the district level, 730 primary Agricultural Co-operative Societies are working at village level and 5 Urban Co-operative Banks are working

state level. primary Agricultural Cooperative Societies are not a co-operative bank but working with the district co-operative banks. Total 394 co-operative banks branches are working in Uttarakhand out of these branches 286 branches are of rural co-operative banks and 108 branches are of urban co-operative banks. 1 state co-operative bank of Uttarakhand capital subscribed by above mentioned 10 district cooperative banks, these co-operative banks capital subscribed by above mentioned 730 primary agricultural credit societies and capital of these 730 primary agriculture societies are subscribed by farmers of Uttarakhand. In terms of the loan, this hierarchy goes on reverse way, 730 primary agriculture credit societies take the loans from 10 district co-operative banks and give loan to farmers, 10 district co-operative banks take the loan from state co-operative banks and gives loan to 730 primary agricultural credit societies, and 1 state co-operative bank take the loan from NABARD and gives loan to 10 district co-operative banks and these all loans are on concessional rate of interest in the comparison of other loans. In the above table, 10 urban cooperative banks are works separately and independently. These descriptions can easy understand by the following chart:

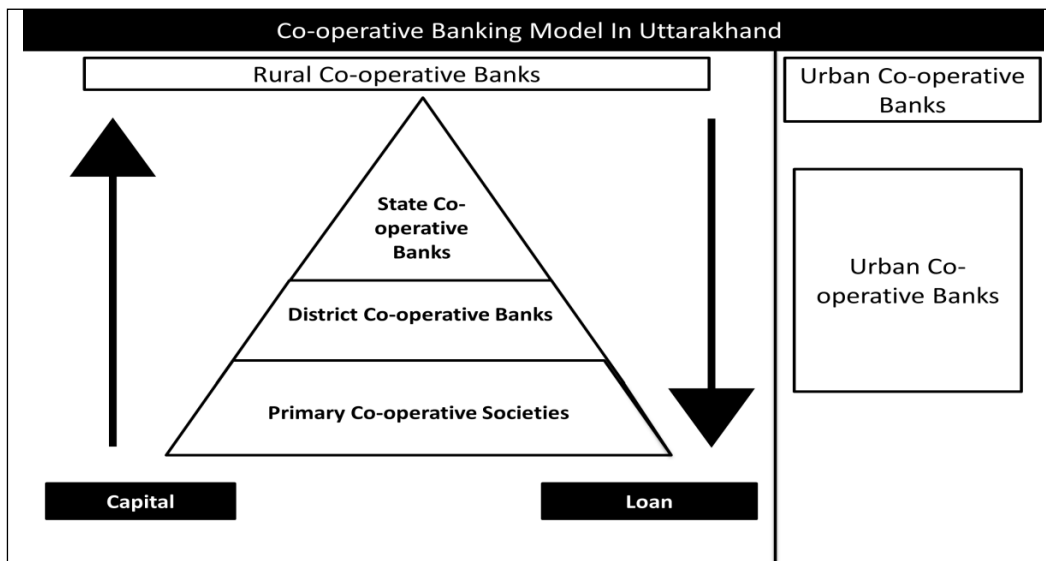


Fig. 1: Co-operative Banks Model in Uttarakhand

Source: Primary Data

“The state co-operative bank is a federation of District co-operative bank and acts as a watchdog of the co-operative banking structure in the state.” Bose G. Subashchandra, Nagarajan P., (2018). Uttarakhand state Co-operative Bank 98.71% of its total loan has taken (Rs.144383.7 lakh) from NABARD. Nainital District Co-operative Bank took loan Rs. 7100 lakh from Uttarakhand state co-operative bank and Nainital district co-operative bank subscribed Rs. 793 lakh capital of Uttarakhand State Co-operative Bank. The loan amount is approx 9 times of capital amount.

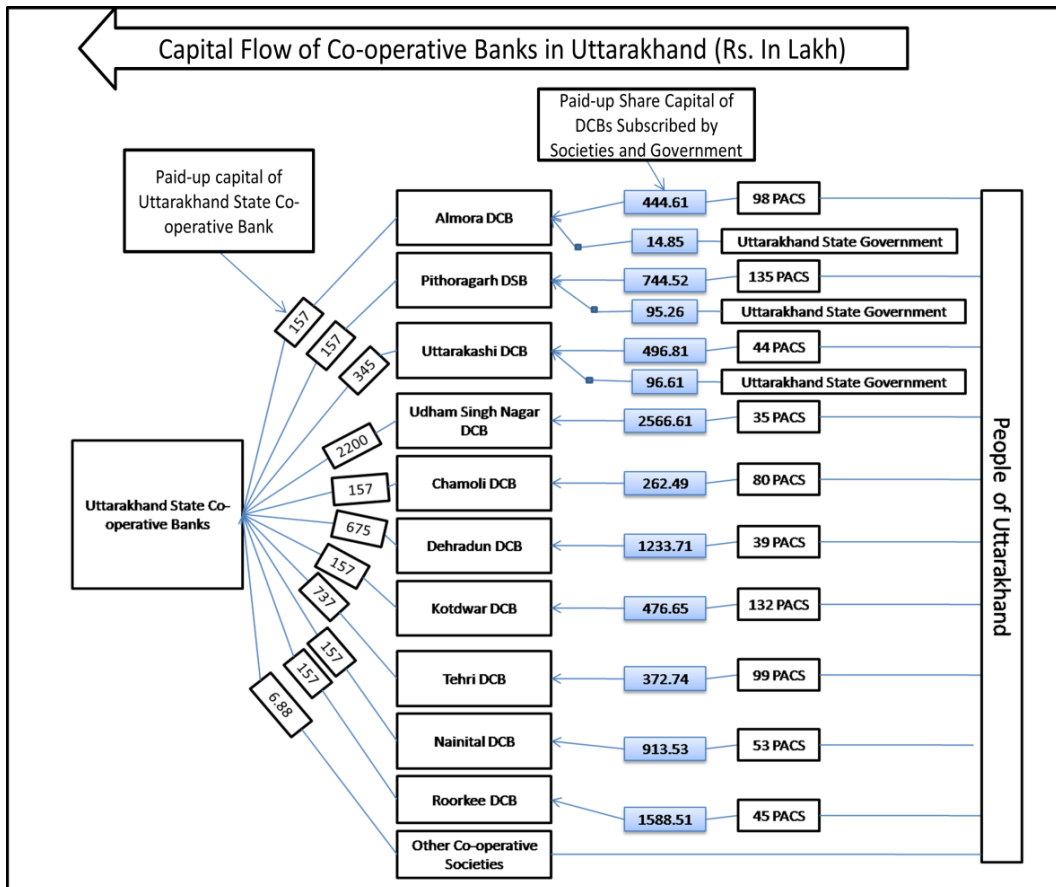


Fig. 2: Capital Structure of Rural Co-operative Banks of Uttarakhand

Source: Developed from the data of the Annual Report of Uttarakhand State Co-operative Bank 2018-19.

Very first farmers of Uttarakhand subscribe the capital of seven hundred thirty Primary Agriculture Credit Societies (PACS) and then seven hundred thirty PCBs and Uttarakhand Government subscribe capital of Ten District Co-operative Banks (DCBs) and then ten DCBs subscribe to the capital of one State Co-operative Bank.

CONCLUSION

This study aims to present the types of co-operative banks in Uttarakhand, co-operative banks in Uttarakhand, Number of branches of each co-operative bank working in Uttarakhand, Scheduled and non-scheduled co-operative banks in Uttarakhand and present the ownership of co-operative banks in Uttarakhand. As the result concluded that the two types of co-operative banks are working in Uttarakhand which are rural co-operative banks and urban co-operative banks. Rural co-operative banks are further sub-divided in state co-operative banks and district co-operative banks. 16 co-operative banks are registered in Uttarakhand out of which 1 state co-operative bank, 10 district co-operative banks and 5 urban co-operative banks are registered and working in

Uttarakhand with its 394 branches in all over Uttarakhand. Only state co-operative is scheduled banks with RBI and remaining 15 district and urban co-operative banks are nonscheduled banks. Very first people of Uttarakhand farmers subscribe to the capital of seven hundred thirty Primary Agriculture Credit Societies (PACS) and then seven hundred thirty PCBSs and Uttarakhand Government subscribe capital of Ten District Co-operative Banks (DCBs) and then ten DCBs subscribe to the capital of one State Co-operative Bank and five Urban co-operative banks capital are in private hand.

REFERENCES

- [1] Bose G. Subashchandra, Nagarajan P. (2018). Current Scenario of State Co-Operative Bank in India and Its' Working Performance, *International Journal of Science and Research (IJSR)*, Volume 7 Issue 5, DOI: 10.21275/ART20182399 pp 682–687.
- [2] Hema Adhikari, 2dr. Kamal Joshi (2018). Role of District Co-Operative Bank in Financial Management of Agricultural: (A Study Based On Nainital and U.S. Nagar District of Uttarakhand), *International Journal of Social Science and Economic Research*, Volume: 03, Issue: 06, pp. 2715 – 2727.
- [3] Lekshmi. V. (2019). Kerala State Cooperative Bank as an Apex Bank – A Study. *International Journal of Environment, Ecology, Family and Urban Studies*, Vol. 9, Issue 2, Apr 2019, pp 91–94.
- [4] Merry Elizabeth John, Joby Joseph Thoomkuzhy (2018). Service Quality Dimensions and Customer Satisfaction of Pathanamthitta District Cooperative Bank, *International Journal of Management, IT & Engineering* Vol. 8 Issue 3, pp 307–319.
- [5] Nivedita. (2018). Trend Analysis of Best Performing Cooperative Bank in India: A Case Study. *International Journal of Management, IT & Engineering* Vol. 8 Issue 1, pp 70–75.
- [6] Ravindran, R. *A study on Financial Management and Customers' Perception in Tirunelveli District Central Co-operative Bank Ltd., Tirunelveli, Tamilnadu.* (2011). Manonmaniam Sundaranar University.
- [7] RBI Chapter IV of Development of Co-operative Banking, <https://www.rbi.org.in/upload/Publications/PDFs/58848.pdf>
- [8] Bose G. Subashchandra, Nagarajan P. (2018). Current Scenario of State Co-Operative Bank in India and Its' Working Performance, *International Journal of Science and Research (IJSR)*, Volume 7 Issue 5, DOI: 10.21275/ART20182399 pp 682–687.

Overview of Inventory Optimization in Operations Management

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Abstract: Inventory Optimization (IO) is the application of a range of latest techniques and technologies for improving inventory visibility, control, and management across an extended supply network. A key Inventory Optimization technique is a profit-driven analysis, where the profit of each individual product is ranked. A key Inventory Optimization technology is the IO engine. IO engines reveal opportunities to cut inventory by analyzing the inventory performance holistically-looking at data from across the extended supply network. Inventory costs represent a significant component of total logistics costs. Inventory management remains a critical factor of great concern for organization as they plan their e-business future. E-inventory management is the true barrier of entry to e-business. IO techniques apply rigorous and discrete analysis to analyze inventory performance. Then this analysis is used to identify product specific changes to inventory stocking and replenishment policies, to identify the supply network configuration, or to correlate inventory investments to item revenue or profit generation.

Keywords: Inventory Optimization (IO), Inventory Optimization Technology, Supply Network, E-inventory Management, E-business and Inventory Performance

INTRODUCTION

Optimized inventory planning comes into its own-in the down economy, users seeking to reduce costs still look to cut the inventories to the bone. They are showing interest in optimized inventory planning to reduce inventories across the overall supply chain, including service parts. Inventory levels and placement to support required customer service levels are no longer a by-product of SCP, but instead the key output of these specialized planning applications.

On the planning side, a Pareto distribution is developed to separate high profit products; and inventory holding policies are adjusted to cut inventory on low ranked products and increase inventory on high ranked products, resulting in intelligently applied net inventory reduction. IO engines identify smarter inventory holding rules and replenishment policies that increase overall supply chain planning accuracy.

Smarter typically means applying these policies at a more discrete level, such as at an item/stock keeping location combination level instead of just at the item level.

IO engines characterize supply network uncertainty present in a variety of specific steps or links in manufacturing and distribution process using advanced mathematical (non-linear, algorithmic, and so on) models that are then solved to identify optimal inventory policies, stocking locations or quantities. The uncertainties addressed by IO engines include: demand uncertainty (or forecast error), cycle time variability and replenishment lead time variability. The output of running an IO engine is feedback to ERP, constraint based planning or other discrete planning systems, adjusting inventory policies as a finite level.

Inventory optimization is: “a method of balancing capital investment constraints or objectives and service-level goals over a large assortment of stock-keeping units (SKUs) while taking demand and supply volatility into account.”

Inventory optimization is the practice of having the right inventory to meet your target service levels while tying up a minimum amount of capital in inventory. To achieve this, you need to account for both supply and demand volatility. Inventory optimization is the next level of inventory management for warehouse and supply chain managers and buyers.

Generally defined as consisting of supply chain planning, forecasting, and replenishment processes, **inventory optimization** is aimed at reducing **inventory** costs in the supply chain while improving availability (service), increasing profitability, and providing a competitive advantage in the marketplace.

To a large extent, ERP is focused on inventory. The Material Planning function at the core of ERP calculates when parts and materials are needed and plans for their acquisition in time to avoid shortages while limiting the amount of inventory as much as possible. Inventory level and inventory turns are primary measurements that most companies watch as indicators of their success in managing the business and this very costly part of operations.

Reducing inventory while maintaining or improving service level (availability or lack of shortages) is the proverbial “win-win” accomplishment for manufacturers and distributors.

Any company that has additional warehouses or storage locations outside the plant will want to manage those inventories as well. And that’s where “inventory optimization” comes into play. Generally defined as consisting of supply chain planning, forecasting, and replenishment processes, inventory optimization is aimed at reducing inventory costs in the supply chain while improving availability (service), increasing profitability, and providing a competitive advantage in the marketplace.

To optimize means to seek the best or most effective result. Obviously, a lower level of inventory reduces cost but too little inventory leads to shortages and higher costs for

expediting, premium freight, customer dissatisfaction and lost sales. So optimization goes beyond just minimizing inventory – it is looking for the best and most effective amount of inventory to yield minimum overall cost.

The planned amount of inventory in the supply chain is the difference between forecasted demand and planned replenishment. That's why inventory optimization focuses on better forecasting and improving the replenishment planning process. Collaboration with supply chain partners in developing those plans and forecasts is usually a key part of improving supply chain inventory performance. Additional focus is on bringing the forecasting and demand planning process more fully into the overall plan through a formalized Sales & Operations Planning (S&OP) process. Overall costs are reduced by making the best use of resources including transportation and warehousing.

Reduced inventory means less warehouse space required but can also mean more shipments in smaller quantities in and out of the warehouses and that increases labour and handling costs as well as transportation costs. Minimizing inventory will not necessarily result in the lowest overall cost. That's where the optimization aspect comes in.

By watching how the various costs interact, the system can develop the lowest overall cost plan with the right (optimum) amount of inventory.

Inventory Optimization will make you more competitive:

The world is going through several revolutions simultaneously; digitalization, globalization and security threats are just a few of the macro trends that affect companies and supply chains worldwide. Consumer behaviors and habits are changing more rapidly than anyone thought possible just a few years ago while new technology makes it possible to source cheaper and better products from all over the world. This results in complex global supply chains where every link contains an opportunity for something to go wrong. But those who account for uncertainties within their supply chain will be one step ahead of their competition and better prepared to meet customer demand.

Enterprise-sized companies like Amazon and Target already have advanced systems in place for optimizing the supply chain, allowing them to source products from all over the world and deliver to their customers – sometimes within a few hours. But this is far from reality for many small- and mid-sized businesses (SMBs) who are still trying to calculate order quantities, safety stock and reorder points in Excel. Manually managing the supply chain results in rough estimates for inventory quantities which in turn leads to excess inventory (that will eventually go obsolete) or, alternatively, poor service levels to their customers. Ten years ago it might have been ok to ask your customer to wait a few weeks until you got the right product in stock, but today you're likely to lose

that customer to another vendor if you aren't able to deliver. After all, your competitor is just a click away.

Table 1: Different Types of Inventory Management and Control Techniques

“Classic” Inventory Management	“Advanced “ Inventory Management	Inventory Optimisation	Advantage of Inventory Optimisation over Prior Methods
Material Requirements Planning (MRP)	Constraint based Planning (APS)	BD Engine	• Better characteristics demand uncertainty and lead time variability • Advanced modelling integrates with MRP and APS
Days of supply rules for setting inventory levels	ABC Classification	Profit Driven Analysis	• Rationalizes inventory with minimal impact on revenue/profit
Cycle Counting	Materials Management Systems	Closed loop planning and analytics with inventory control via exception management	• Provides more predictable control over material flows • Enable faster reconfiguration of supply chain • Supports smoother absorption and handling of unexpected supply or demand swing impact
No control over production scheduling	Resorts to chase the techniques	Optimises considering production and transportation batches	• Better synchronisation between production and dispatch.

KEY ELEMENTS OF INVENTORY OPTIMIZATION

Optimizing your inventory means that you will determine exactly how much you need to order of every single SKU and when you need to order it to always be able to serve your customers. Inventory optimization takes seasonality and campaigns into account as well as supplier lead times and schedules. This way you will always have the right products in the right warehouse without tying up too much capital in inventory.

The key elements of optimizing your inventory and link to resources that will give you more details of each key concept:

- Demand forecasting
- Inventory policy
- Replenishment

DEMAND FORECASTING

There are several ways to forecast demand including looking at last year's or last period's demand or request forecasts from your sales force. This can work for some SKUs, but on other items these methods can put you on the completely wrong track.

Every product has a life cycle. For example, when the product is first introduced to the market it will not have any historical demand at all. From there it will likely move into a positive trend where the demand is constantly growing until it becomes a stable and fast moving SKU. From there, it might get more irregular and then move into a

negative trend where the demand is falling to becoming a dying and finally obsolete product. To accurately forecast your SKUs you need to know where in the life cycle all your SKUs are right now and how they move through the product life cycle.

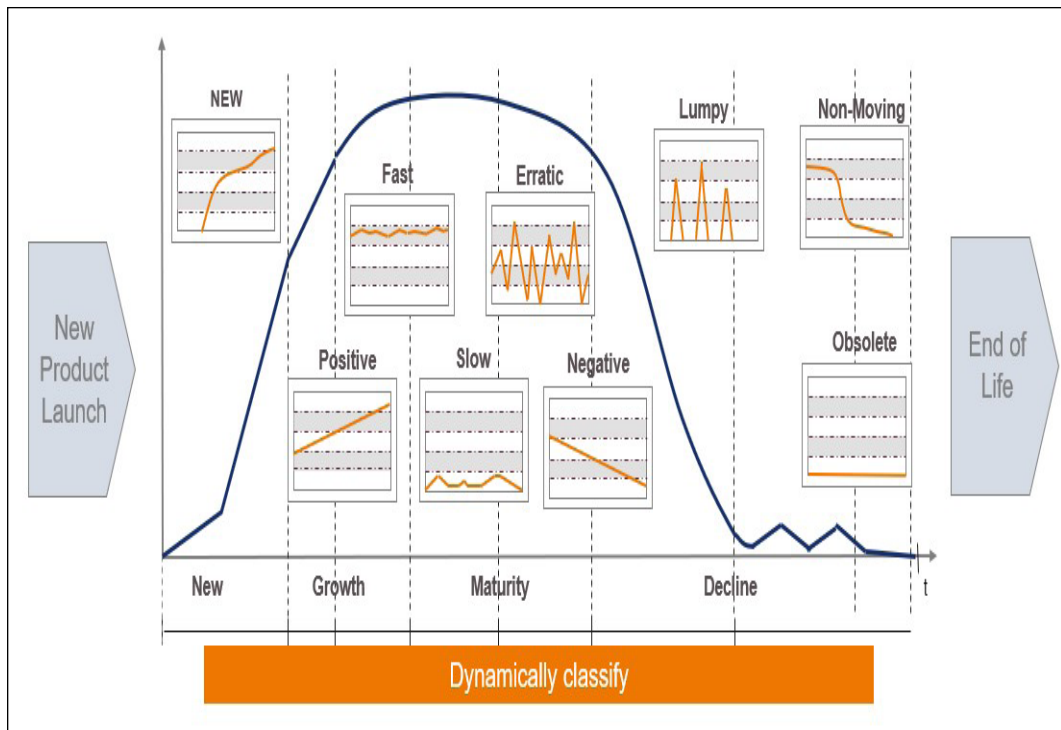


Fig. 1

Another thing to keep track of is seasonality. A product that only sells in the summer, like sunscreen, cannot be forecasted based on the previous quarter's demand. New product introductions also throw a wrench into demand forecasting; a product that was new a year ago cannot be forecasted based on last year's demand.

Finally, campaigns and promotions are great tools for marketers but can be a headache for planners and purchasers. It might seem obvious that you have to plan for campaigns, but in reality this is not always done properly and the entire campaign risks failure.

INVENTORY POLICY

The next step is to determine your inventory policy, which means determine which products to stock and how much to keep of each unit.

One common method is to sort SKUs based on ABC analysis, where you classify your inventory into A, B and C classes depending on their annual consumption value. This blog will not go into the detail of ABC classification, but you can read all about it in our blog post on ABC analysis. This analysis helps you to determine which items to stock in your warehouse and which items can be ordered on demand.

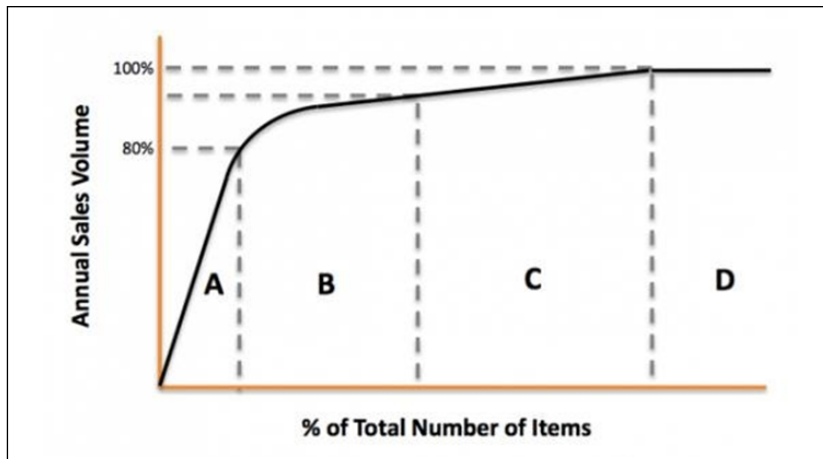


Fig. 2

ABC analysis & The Pareto Rule for inventory management. Then you need to determine how much safety stock you need to keep in order cover sudden demand peaks, supplier disruptions or other unforeseen disruptions. Finally, it doesn't matter if you have the exact right quantity of each item if you store them in the wrong places. Therefore, if you have more than one warehouse, you need to optimize your inventory to be distributed over your locations in the right quantities at the right time and place. And if you don't have enough demand of an item in one specific region, but still enough global demand, you'll want to find the right warehouse to store it in to be able to ship it out to where it's needed as quickly and cost effectively as possible.

REPLENISHMENT

Last but certainly not least is stock replenishment. This is to calculate reorder points and order quantities and turn them into actual orders.

A few things you need to track to optimize your purchases are:

Supplier Reliability

Supplier lead times have a big effect on stock availability and service levels. In addition to lead times for your different items, you also need to know opening hours and production cycles. For example, many Chinese manufacturers shut down production completely for the Chinese New Year which comes as a surprise to many western distributors. Another common challenge is some products have lead times of several months. If one of your fast-moving items has an exceptionally long lead time and your customers expect fast deliveries, you can get into real trouble if you didn't order enough quantities in time.

Goods in Transit

If you are placing an order for an item, it's not enough to know what you currently have in stock to determine the order quantity. You also need to know what you currently

have in transit and on the way into your warehouses from your suppliers. This may seem obvious, but most ERPs and other systems don't have this information easily available.

7 WAYS TO OPTIMIZE INVENTORY MANAGEMENT AND IMPROVE FULFILMENT

1. Use a management solution with real-time data
2. Implement third-party and automation solutions
3. Track the whole supply chain
4. Build contingencies for pipeline inventory
5. Regularly re evaluate supply-chain components like manufacturers and logistics
6. Shore up inefficiencies in your warehouse
7. Develop sophisticated forecast models

Inventory models are abstractions that cannot capture all possible actions to balance supply and demand.

The objectives of inventory management are to provide the desired level of customer service, to allow cost-efficient operations, and to minimize the inventory investment.

CONCLUSION

These are crucial elements to having the right stock in the right places at the right time and are the foundation of inventory optimization. You can do all these calculations in Excel and manually enter them into your ERP, but if you have a few hundred items in your inventory (or more!), it's almost impossible to correctly track everything manually. Effective inventory management represents one of the easiest ways for e-Commerce retailers to cut costs. Relatively simple processes, like tracking, forecasting and contingency planning, can lead to a significant reduction in the cost of acquiring, holding and shipping stock. Being open to untried fulfilment methods, like cross-docking and alternative courier selection, can further diminish costs.

REFERENCES

- [1] Muller, M., 2011. *Essentials of Inventory Management*, 2nd ed., AMACOM
- [2] Piasecki, D., 2009. *Inventory Management Explained: A focus on Forecasting, Lot Sizing, Safety Stock, and Ordering Systems*. Ops Publishing.
- [3] Bragg, S.M., 2011. *Inventory Best Practices*, 2nd ed., Wiley
- [4] Viale, J.D., 1996. *Crisp Basics of Inventory Management: From Warehouse to Distribution Center*, Crisp Learning.
- [5] Wild, T., 2002, *Best Practice in Inventory Management*, 2nd ed., Butterworth-Heinemann.

Editors' Profiles

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Debasis Chanda is Professor of Operations Management and Dean-Academic at MDI Murshidabad, West Bengal, India. He holds a Bachelor of Engineering (Electrical Engineering) from Jadavpur University, Kolkata. He also holds a PGDBM from the Indian Institute of Management Calcutta (IIMC) and a PhD (Engineering) from the Department of Computer Science and Engineering, Jadavpur University.

Professor Debasis Chanda brings forth a blend of rich experience in Industry and Academics. He has 20 plus years of cross-functional experience in the Information Technology (IT) Industry including global exposure in Enterprise Architecture Consulting, SOA (Service Oriented Architecture) Consulting, Project Management & Business Development. He also has more than 5 years of experience in the Engineering Industry along with more than 5 years in Academia.

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Dr. Amrita Sengupta is currently a Faculty at Management Development Institute Murshidabad. She has completed her PhD from IIT Kharagpur and her Masters in Economics from Jadavpur University. She has more than fourteen years of experience in teaching, research and administration in varied organizations like IIM Calcutta, Sikkim Manipal Institute of Technology, iLEAD and Institute of Wetland Management and Ecological Design.

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She has worked extensively in both Development Economics and Resource and Environmental Economics. She has also worked at the CII in a World Bank Project and on a DFID sponsored Project coordinated by Stirling University. She has publications in several peer reviewed journals, books, learning materials, Conference Proceedings, Reports both national and international. She has been the editor of several publications for both IIMC and SMIT.

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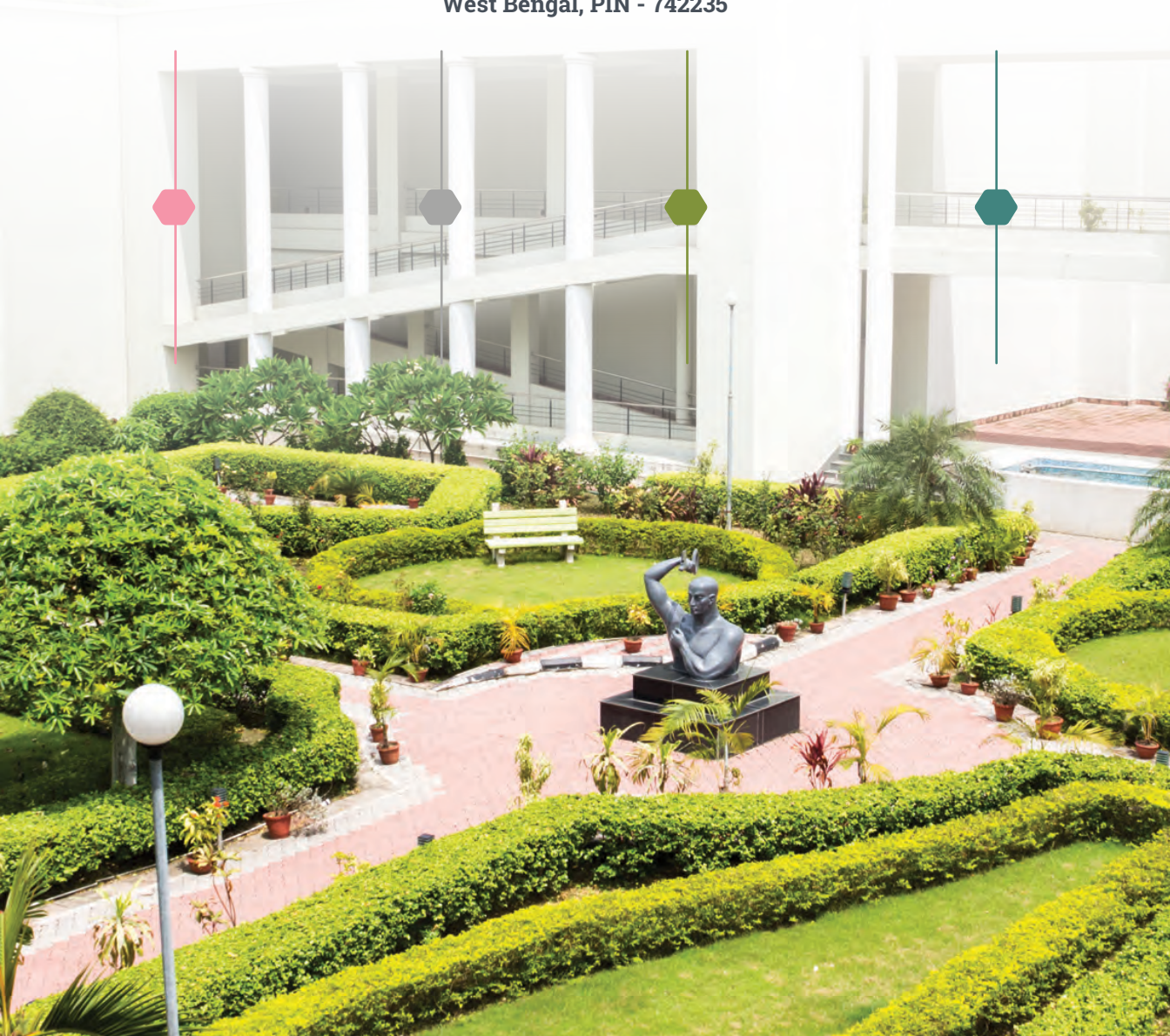
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